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## MEANING AND SIGNIFICANCE.

BY C. LLOYD MORGAN, D.Sc., LL.D., F.R.S.

I HAVE been asked to furnish a report of the address I had the honour to give at a meeting of the Teachers' Training Association on the 30th December last. I think it well to do so in the form of notes dealing with its subject-matter.

We have two words, "meaning" and "significance," and these two words are commonly used interchangeably. My suggestion is that it will be helpful if they are used with a difference.

This difference will be understood by psychologists acquainted with the admirable work of Professor Stout, if I say that the suggestion is that meaning should be restricted to the relatively perceptual field of mental life, while significance should be reserved for the conceptual field. It may serve also to illustrate how I regard the distinction between the closely inter-related processes in these two fields.

Of course, even if my suggestion should prove acceptable, the usage of popular speech will remain as it now is. I have in view the usage of those to whom such distinctions are an aid in rendering their thought and their modes of expression more clear and exact.

It must be remembered, however, that there is no sharp line of demarcation; the one shades up into the other. It is not suggested that significance is not meaning, but rather that it is meaning raised to a higher intellectual level. It must be remembered, too, that after infancy nearly everything carries with it both meaning and significance. To get at the lower-level meaning therefore we must abstract from the higher significance also present in some measure.

In the changing world in which we live new things and events are constantly being presented to our minds through our organs of sense. Let us symbolize what is thus directly presented as "P," remembering that, for analytic treatment, this is just what is, for example, actually seen—let us say, what we learn to describe as water in a tumbler on the table. It includes what we come to interpret as a group of things in their there and then relatedness. In this relatedness they are presented as I use the word.

But any such group of presented things, at any rate after early infancy, calls up what, on the basis of previous experience, we expect to be presented as the situation develops. It evokes, too, some behaviour appropriate to the situation, if it be only watching its further development.

These qualifying expectations—which so far back as we can remember are always attached to "P," blending with what is directly given—clothe it with a fringe of meaning, which we may symbolize by "m," so that what is "in mind," as we say, is "Pm," a group of presented facts, qualified and supplemented by representative fact-meaning.



This meaning may, and with us often does, develop into definite images; but it need not do so. When I lift a cup of coffee to my lips there is meaning-expectancy, but in my case it does not take the form of a definite taste-image.

It is to such expectation, whether it gives rise to a definite image or not, of how the presented situation is here and now going to develop in further presentation that is just coming, to which I would restrict meaning. Meaning, in this sense, is expected fact-development, often in the absence of any explicitly anticipated fact-detail.

Looking out from my window I hear the rhythmic tramp of feet, which means, and may call up images of, men in khaki soon to come into view. For my dog, I suppose the meaning, as such, might be much the same. But can he grasp the significance of what he sees in relation to a great war? And if he can, may we not profitably distinguish this kind of significance from that kind of meaning?

A behaviour-habit such as bicycle riding is full of delicate shades of meaning for progress on the machine. Turning a corner to the left means leaning over in the same direction: a blast of wind which throws one out of the perpendicular means turning the handle-bar in the direction towards which one is beginning to fall. Here conscious expectancy is scarcely at all, or very dimly, present. But a boy may ride well in accordance with such acquired meaning, and know nothing of the significance of what he does in relation to the scientific principles in terms of which the maintenance of his balance on the bicycle may be explained.

The sight of a factory may mean whirling machinery, clatter and noise, operatives at work, and so forth; but there may be little grasp of the significance of all this in relation to the employment of labour, the placing of capital, and the complex system of national industry.

Meaning is the nearer outcome of what William James used to speak of as "acquaintance with" our world: significance, the more remote outcome of what he spoke of as "knowledge about" our world.

Let me now approach the distinction in a different way. If a child sees a stick floating on water he is directly acquainted with what I will here call a fact. If he sees a leaf drop down towards the water he expects it to float, with or without an anticipatory image. Further fact-meaning is suggested. There may be little more for him, in a very early stage of mental development, than such further fact-meaning.

It is surely unnecessary to remind teachers that at such an early stage of mental development, and indeed throughout life, the clothing of presented facts with practical meaning for the immediate situation is of great importance. "Acquaintance with" is the only sure foundation for "knowledge about."

But when the child grasps "that light things float," the particular fact of this floating stick or leaf has significance in relation to a little general truth having reference to any such things in such a situation



with which he may have direct acquaintance. He is gaining some elementary knowledge about the ways of things in this strange world.

I suggest, then, that meaning is in terms of expected fact-development in a particular situation, while significance is in terms of some general truth, however limited in range, by means of which the facts of the particular situation may be interpreted.

It should be noted that I here use the word "fact" in a restricted sense. We commonly speak of a well-established and generally accepted truth as a fact; we should say, for example, that it is a fact "that light things float," or "that the earth rotates on its axis," or "that the square root of 16 is 4," or "that some men are avaricious."

But, as I here use the word, it is not a fact, to take one instance, that the earth rotates on its axis, but a truth in the light of which a great number of particular facts of observation have significance. We cannot directly observe the rotation of the earth on its axis, though we can observe a great number of facts, such as the rising or setting of the sun, which have significance in the light of this truth.

Furthermore, by the word "truth" I do not here seek to indicate something which is only in the mind of the interpreter of nature or of society, but something, in nature or in society, to which what is in the mind of the interpreter has reference. In this sense, then, truths are part of the structure of the knowable world we seek to interpret. They are already there for us to discover if we have the wit to do so.

I fear that the distinction I wish to draw between fact-meaning and truth-significance will not be readily grasped without more illustration than space here permits. The point I seek to emphasize is that fact and meaning are relatively particular, and that "Pm" arises in the midst of a concrete situation. But that the discovery of truth, and its significance in relation to facts, involves a wider and deeper reach of the mind, and that they are, in technical phrase, always in some degree universal.

Suppose a boy sees a humble-bee alight on a sage-blossom. He will, perhaps, expect some development of the bee-flower situation in ways he has previously observed. This, so far, is meaning in terms of coming facts which he may observe as they come. But if he grasps that this humble-bee is affording an example or instance of the fertilization of flowers by insects, he links up this particular situation, and the facts presented therein, to a general truth which may be exemplified in hundreds of facts of observation. I symbolize therefore thus "Pms," where "s" stands for significance.

The worst of any such formula is that it gives only a momentary snapshot of an arbitrarily isolated state within a continuous process. Just as meaning implies the further development of a fact-situation, so does significance imply a further development within a thought system. Furthermore "Pms" is an emergent whole with a character of its own; and in it the "P," the "m" and the "s" can only be analytically distinguished, not separated.

I take it the expression " $\sqrt{2}$ " has significance for most of my readers. But this significance indicates a line of thought which is followed up, not merely a point of thought in which we rest. It is only a point of thought which is momentarily occupied; and at that point of thought it is just what it is with a character all its own.

Now for the teacher I think the realization of the distinction I have drawn between facts and truths and between meaning and significance may serve to emphasize a difference which is already quite familiar in practice, though (fortunately!) not dealt with in such crabbed terms. But we must here pause for a moment to extend the use of the word presentation (anyhow apt to be somewhat ambiguous) to a verbal description of any presentable situation. Facts are thus presented at second hand and carry meaning in terms of the further fact-development which may be described and which would be observed if we were in presence of the situation.

Even here the educational use of the word presentation extends beyond the descriptive presentation of facts as I am here restricting this word. We commonly speak of the presentation, through the medium of language, of what I here speak of as truths, as well as of facts; and it would be unwise to suggest any modification of this usage.

Take now the teaching of history to young folk. The stress should surely be, at first, on the relatively perceptual and pictorial point of view, since the fact-meaning of developing situations thus presented can, in some measure, be grasped by the pupils, whereas the wider significance of events in relation to the great truths of history may be beyond their reach. And since this wider significance is often what is most prominently in the field of the teacher's own interest, he runs some risk of forgetting that it is not yet, to any like extent, within the sphere of his pupils' interest.

Of course, the distinction must here be taken in the relative sense. There are truths underlying the development of each historical situation which make the actions of the men who play their part therein in some measure then and there significant. The teacher should lead up gradually from these narrower truths of the immediate situation to the greater truths which give to many situations a fuller and wider significance, and illuminate this particular situation.

In elementary physical science, and in nature study, the specialist is all too prone to introduce far-reaching significant truths, of a rather difficult order, before the mind of the pupil is adequately prepared for them through sufficient acquaintance with the more elementary meaning of selected facts.

And he is somewhat apt to fancy that, if only he explains the truths of wider significance in language sufficiently simple, they can readily be grasped. But often the pupil's difficulty is not so much in understanding what is said, and perhaps reproducing it verbally, as in bringing what is said into real living touch with his comparatively slender store of significant truths systematically ordered.



So, too, in literature. There is no difficulty in superficially understanding, and glibly reciting, Shelley's lines:

"Drive my dead thoughts over the universe  
Like withered leaves to quicken a new birth."

The words hang together and make sense, and can be committed to memory. But it requires some thought to catch their deeper significance, and to see what connexion there is between dead thoughts and withered leaves, and how dead thoughts "quicken" a new birth.

And here it must be remembered that words and phrases, and indeed long passages, may be read aloud or recited with not much more in mind than meaning for their pronunciation. Stephen Hawker, of Morwenstowe, used to read aloud to his invalid wife long novels while his active mind was pursuing quite other thoughts. He remembered nothing of character or incident, since the paragraphs he read aloud carried for him little or no significance.

The teacher must in all subjects remember that the natural order of development is from "Pm" to "Pms"; that the "s" is, at first, only a very little "s" just emerging out of "m"; that only gradually does it grow so as to reach its dominant position in thoughtful persons; and that great care must be exercised in adapting the teaching to the estimated stature, in the pupil's mind, of the significant "s."

If I may play for a little longer on this formula, one may say that, broadly speaking, it stands between facts and truths thus—

Facts  $\leftarrow$  Pms  $\rightarrow$  Truths.

It is the business of the teacher skilfully to swing the pendulum to and fro between an increasing body of facts described, and if possible observed, and the truths which the facts exemplify and by which they are illumined.

He will thus more and more fully realize that the fine saying which Mr. Bertrand Russell applies to Literature is yet more widely applicable. "Literature," he says, "embodies what is general in particular circumstances whose universal significance shines through their individual dress."

Pass now to a somewhat advanced stage of mental development, so that we may briefly consider to what large ends we should try to lead significance onward and upward. It may be helpful, if perchance a little fanciful, to play upon the letter "S" in suggesting some of the more salient attachments of significance.

First, significance links presentations and their low-level meaning to a Scheme of interpretation such as Science propounds. Of this, the significance of sunrise and seasonal changes, of the stigma and stamens of a flower, of the stability of a spinning top, may be taken as simple illustrations.

Secondly, significance attaches to the situations of daily life in relation to a System of conduct. Thus the sight of the man who had fallen among thieves, in the parable, had differing significance for the Levite and the Samaritan.

Personally, I think it well to reserve the word "conduct" for behaviour thus raised to the significant level where motives obtain in relation to some Standard or normative ideal, say, of Ethics.

On these terms the behaviour of quite little children involves impulses dependent on the presence of little more than fact-meaning qualifying their inherited tendencies to behave in certain specific ways in certain situations; and this behaviour is gradually raised to higher and higher levels of action as purposeful significance is more and more fully related to a System of conduct.

Both the Scheme of interpretation and the System of conduct involve what I will here call Supposals. We frame our interpretation in terms of what we have been led to suppose (in this sense) are the laws of nature. Such supposals on our part answer, with more or less validity, to the truths which await our discovery.

So, too, we mould our conduct in relation to what we suppose to be the principles of wise and right action. From what has just been said as to the relation of supposal to truth, it will be seen that this statement does not imply a denial of true principles of right and wise action in some sense independent of our supposals.

It will be noticed that the word "supposal" is here used in a rather extended technical sense—one inclusive of hypotheses, judgments, and ideals in so far as these are objects which the intellect can grasp.

Among these ideals, of great importance, is that of the Self, the realization of which is part of the purpose of our endeavour. Strewn along the pathway of life are opportunities for thus realizing in some measure that better self which is the unattainable goal of the course we run. These opportunities therefore have significance in relation to our concept of self—significance we too often fail to grasp, and thus miss our opportunity to our subsequent regret.

But this self has further significance in relation to the Society in which we live and to the Social ideal. It is a self related to other selves, and reaches its full development only within an organized system of selves. The higher significance therefore attaches to a Socialized Self.

And here the higher forms of Sympathy gain strength. This is the sympathy which characterizes a rational being who is fully conscious of purpose. It is, figuratively speaking, the sympathy which realizes the significance of its own place and the part which it plays in contributing to the attainment of the Social ideal.

Furthermore, in the emotional life it is significance which gives character to our Sentiments. This word is here used for the systematic emotional attitude which arises in presence of that by which it is evoked.

Significance as such, I take it, is coldly intellectual. It is part of our cognitional outlook on the knowable. But in so regarding it we abstract from the emotional warmth which is always in some measure



present. Restore this emotional warmth—this distinguishable aspect of our enjoyment of the significant—then we have what I here call sentiment.

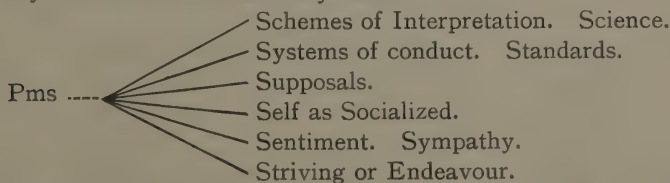
On these terms the emotional warmth which attaches to meaning has not risen to the level of sentiment which is the emotional warmth which attaches to significance. But Mr. Shand, to whom we owe so much for his study of the emotions, would not agree with this restriction of the sentiments to the conceptual life. It should be understood therefore that the sentiments to which I refer are the higher and more distinctively human sentiments.

The mother sees in her lately-born child a presentation which carries for her, as also does the kitten for the cat, meaning for parental ministration, and this meaning glows with emotional warmth in the enjoyment of the mother. But for the human mother the sight of her infant carries also rich significance which profoundly modifies her whole system of conduct; which raises her ideal of the socialized self to a higher level; which makes her whole emotional nature glow with a richer warmth of sentiment; and which stimulates her life of action to higher modes of systematic endeavour.

In this higher type of endeavour or Striving we reach the last of the "S's" I need here mention, as connected with the ends to which significance leads upward and onward. It is the purposeful striving which implies desire for the attainment of an anticipated end. However we name it, this significant striving, in which impulse is raised to the level of motive, should, I think, be distinguished from the lower impulsive striving which is seen in a dog in presence of a bone, which, perhaps, has only meaning in terms of further fact-development.

I am well aware that I raise many debatable points, and have not space adequately to safeguard my positions. What I seek to render clear is a point of view which may be taken by those who accept a distinction between the perceptual and the conceptual levels of mental development. From that point of view it would appear that any presentation of fact which carries not only meaning but significance may run up, through truths of more limited range, into such large human ends as I have all too briefly and imperfectly indicated.

I may summarize schematically thus—



Obviously the setting out in such a tabular form must not for a moment be taken to imply any separation of what is recorded on separate lines. The whole must be read subject to the unity and continuity of the conscious life as it is enjoyed.

In all that I have said with regard to meaning and significance as such the emphasis is on cognition; in the little that I have said on the warmth of emotional tone and sentiment the emphasis is on the affective glow of enjoyment; in the final allusion to striving and endeavour the emphasis is on conation as change in progress towards the anticipated end.

But here again it is only a matter of emphasis; and that which is emphasized, though it may be distinguished, can nowise be separated from the other members of the trinity which is in truth a unity.

It may be said that the distinction between meaning and significance which I have tried—perhaps some may think laboured—to draw is after all but a verbal distinction, and therefore of little value. But I venture to urge that, if verbal distinctions mark distinguishable though not separable phases for theory and for practice, they are likely to react on theory and on practice, and thus to render them more effective.

And, in any case, I venture to hope that some teachers may possibly find my suggestion helpful in enabling them to keep in view the level of significance at which, in any branch of work, their teaching should be sustained.

Of course, in different subjects the attachments of significance to the several ends of human endeavour will vary in relation to the dominant purpose. In science the scheme of interpretation is chiefly in view; and though, to those who are interested in science, the outlook is never wholly cold, intellectualistic, and unemotional, still it is not the special function of science to appeal to our sentiments.

On the other hand, in the humanities and in all art-work this appeal to our emotional nature is distinctly characteristic. This, of course, does not imply that literature and art are not richly intellectual. The point is that the appeal is through the intellect to the heart, and that this aspect of their significance should be emphasized in our teaching.

But both in science and in the humanities—in all subjects, as in all active life—there must ever be stress on significant striving and endeavour to achieve a higher standard of excellence, and to attain, so far as possible, to better ideals.

In conclusion, we must always bear in mind that for the little child there is much meaning and often but little significance in what he is made to do. It is those who make him do it who, apart from mere routine, realize its significance.

But to say that he should be made to do nothing until he is in a position himself to realize its significance, that he should be made to learn nothing of which he cannot "see the use," that he should be trained in no good habits till he can grasp their value for the moral life—this, if it be really true that there are people who are so foolish as to say so, betrays, I think, sheer ignorance of the normal course of mental development—through meaning to significance.



# NORMS OF PERFORMANCE IN THE FUNDAMENTAL PROCESSES OF ARITHMETIC, WITH SUGGESTIONS FOR THEIR IMPROVEMENT.

By P. B. BALLARD, M.A., D.Lit.

(Continued.)

*Comments on the subtraction test.*—The most salient feature of the subtraction results is the evidence afforded of the superiority from a practical point of view of the method of equal addition over the method of decomposition. Counting mixed schools as two, there were 35 boys' schools concerned, and 36 girls'. In 14 boys' schools and 9 girls' schools subtraction was taught by the method of equal addition; and in all the other schools it was taught by the method of decomposition. For the sake of brevity I will refer to these two classes of schools as the E.A. schools and the D. schools respectively. If children at an E.A. school are compared with children of the same age at a D. school the superiority of the former in the working of subtraction becomes immediately apparent. I take two examples almost at random:

	+	−	×	÷
E.A. School, Boys, 9 years old ...	20·48	45·31	38·27	19·00
D.           "           "           " ...	20·72	21·11	45·67	17·67

Here it is manifest that the D. school, apart from proficiency in subtraction, is not on the whole inferior to the E.A. school; and yet its inferiority in subtraction is flagrant. The same is true in the following case:—

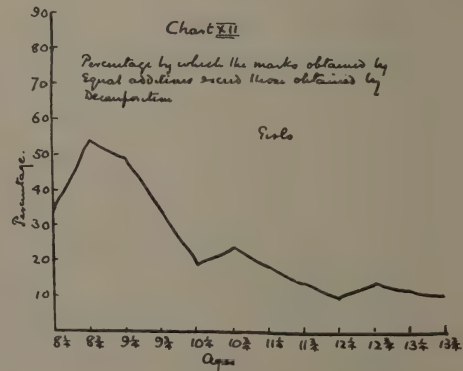
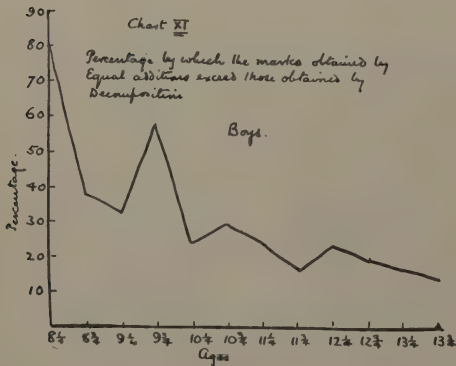
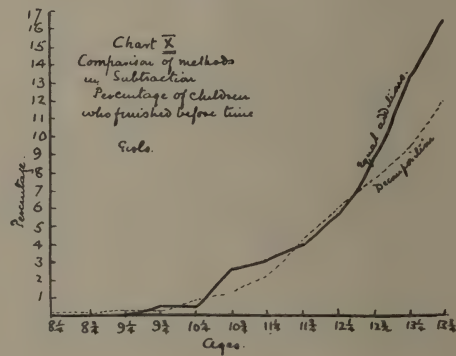
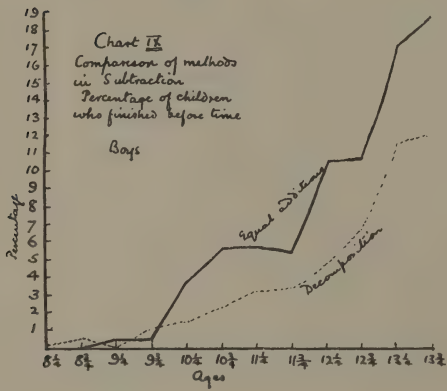
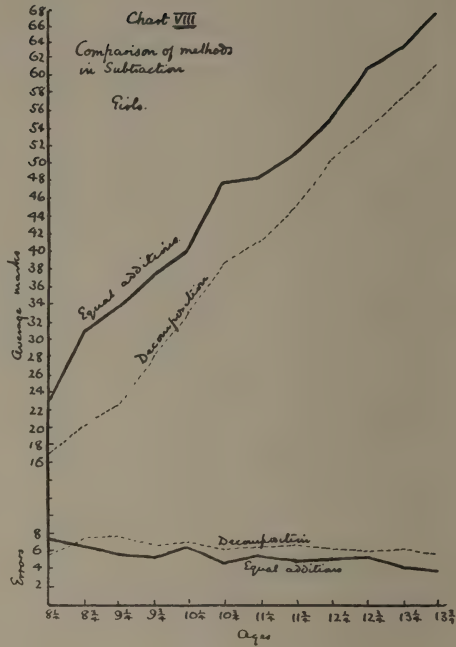
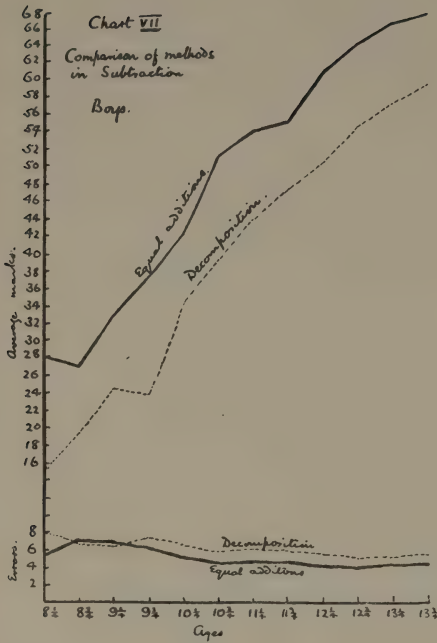
	+	−	×	÷
E.A. School, Girls, 11½ years old...	22·29	51·16	48·45	23·29
D.           "           "           " ...	25·42	40·91	51·69	35·65

Instances of this kind might be multiplied indefinitely. Suffice it to say that for every age the E.A. children of both sexes were found to work subtraction more expeditiously than the D. children. And on the whole the number of errors is less. This difference between the two types of schools can be made clear by an examination of Charts VII and VIII (see overleaf).

Charts IX and X have been constructed to show that the evidence afforded by the number of children who finished before time leads us to the same conclusion. The method of equal additions is distinctly the better.

It will be seen from Charts XI and XII that the advantage of the E.A. over the D. method is greatest at the beginning and diminishes as the children get older. Even at 13 years of age, however, this advantage is over 10 per cent., and at an earlier age it amounts to 40 per cent. or more.

In examining the detailed results a suspicion crossed my mind that the E.A. schools were on the whole superior to the D. schools in all the rules; and this suspicion was to a certain extent confirmed in the case of the boys' schools, but not in the case of the girls'. I give below the precise number of marks by which the average for the E.A. schools exceeded the average for the D. schools, a negative sign indicating a deficit.





*E.A. Schools' average minus D. Schools' average.*

		+	—	×	÷
Boys	...	1.41	9.73	4.08	1.50
Girls	...	— .02	7.42	.68	— .67

The two classes of girls' schools are manifestly equal except in subtraction; and while the E.A. boys' schools are superior in each of the four "rules" to the D. schools, the difference is small compared with the difference in subtraction.

It is clear therefore that from every point of view there is a marked difference between the practical efficacy of the two methods. And the less efficient method is practised in two-thirds of our schools.

But the disparity is really greater than would appear from the above account; or the examples set having few or no noughts in the minuends failed to bring out the more glaring disadvantages of the decomposition method. When, however, such an example as  $40,000 - 197$  is set, the ineptitude of the method is more strikingly revealed. Even in the highest classes of the D. schools the time taken to work such an example is excessive, and the degree of accuracy abnormally low. And yet it is examples of this type (where the minuend is a round number) that are of most frequent occurrence in everyday life. This is obviously so in the case of money. We want change from a five-pound note, a sovereign, a half-sovereign, or a shilling, and not from such a collection of coins as is represented in £4 13s. 7½d.

The reason for the inferiority of the decomposition method is not far to seek. In the equal addition method the compensation is made—accounts are squared—at the very first number dealt with after the minuend has been disturbed. In subtracting 37 from 85, after taking 7 from 15 the disturbed relationship of difference between minuend and subtrahend is immediately restored by increasing the 3 tens to 4 tens. In the method of decomposition, however, it is the 8, the second figure dealt with, that has to be changed to restore the balance. If the minuend figure is zero the balancing of accounts is still longer deferred. In a phrase, the main secret of the difference lies in the dispatch with which accounts are settled. One is "cash payment," the other "credit." And the postponement of the compensating act increases the chances of its fulfilment being forgotten. But this is not the only point of difference between the two methods, for there is a further disparity in the area of disturbance. When the figure in the minuend represents a smaller number than the corresponding figure in the subtrahend it is necessary to disturb the minuend (method of decomposition) or both minuend and subtrahend (method of equal addition). In the latter case it is never necessary to disturb more than two figures; in the former it is always necessary to disturb two, and sometimes many more; and for a young child to bear the many changes in mind is no easy task.

The disadvantage of the decomposition method is not of course limited to pure subtraction sums: it vitiates all exercises into which

subtraction enters. Long division, for instance, is, as I have abundantly tested, performed in D. schools with difficulty and with dubious accuracy.

And yet the decomposition method is apparently taught in about two-thirds of the London schools. What is the reason for its popularity? It is not the method we learnt in our youth; it does not seem to be the method adopted by the adult, even when he has learnt that method at school. The reason is to be found in its greater intelligibility. It is easier for a child to understand the decomposition of numbers than to grasp and apply the principle that the difference between two numbers remains unchanged if the same number be added to both. It is therefore the favourite method in the infant school, and the senior school follows the lead. But granted its greater intelligibility, its practical efficiency is not encouraging. Indeed, as will be observed from Charts XI and XII, the younger the child the more is he shackled by the inferior method. Unless, indeed, we assume that some of the older children in the D. schools discover in some indirect way the equal addition method and use it in preference. It is not often that one finds a class of older children all of whom practise the decomposition method. Do we not in any case pay too great a price for a doubtful boon? If at first the child sees the rationale of the process of decomposing the minuend, he soon gets to perform it automatically. The "intelligence" supposed to be concerned is a temporary illumination only. Indeed for pure practical efficacy it is better that the rationale should not, at the actual time of working, be thought of at all. The pupil should confine his efforts to a rigid application of the rule. I have frequently observed that when teachers in training are asked to work a subtraction sum and explain the steps, they frequently give the right reason but the wrong answer.

It may be pointed out that an intelligent application of an arithmetic rule does not necessarily mean a scientific knowledge of the underlying principles. A child may learn to walk and to put the power to intelligent uses without knowing anything about the mechanism by which walking is achieved. So may he learn to work subtraction by rule of thumb, and be able to apply it quite intelligently to the practical purposes of life. He may later on study the physiology of walking, or the logical basis of the rule; but there is no more reason to think that he will compute better in the latter case than there is for thinking that he will walk better in the former. This is not a plea for the mechanical teaching of subtraction; but it is a plea for regarding subtraction as primarily an instrument to be placed in the hands of the young pupil for the purpose of solving certain problems of actual life. If he can understand the reasons for the steps taken, well and good. If not, he should for the present use it without understanding it. Indeed I have long contended that during the last year or so of an elementary pupil's schooling he should be taught the underlying principles of all the rules he has learnt. Attempts should, of course, be made to render the rules



intelligible at the time of learning; but the teacher should be in the main content if the pupil can use these rules in concrete cases. A critical examination of "long division," for instance, is a valuable exercise for a lad of 13—far more valuable than the senseless manipulation of symbols which often passes for algebra. The mathematics for the last year of the school life of an elementary pupil should include the assimilation of all the undigested material in the whole arithmetic course, if that course is, as it should be, regarded as a systematic study of the principles of numbers.

It has frequently been asserted that there is a third method of teaching subtraction—the method of complementary addition. But this is not, like the two methods just dealt with, a device for meeting the difficulty of "borrowing": it is an alternative way of looking at the process of subtraction itself.  $16-7$  may mean either: (a) what is left when 7 is taken away from 16? or (b) what must be added to 7 to make 16? If the latter view be adopted then subtraction is regarded as complementary addition—as a solution of the equation  $a+x=b$ .

It may be remarked about this form of subtraction that it is not taught as a general process in any of our schools, at least not to my knowledge. It is true that complementary addition sometimes appears in a hybrid form. Thus  $43-26$  is sometimes worked in this way: 6 from 10 leaves 4, 4 and 3 are 7, &c. But such roundabout methods, in which two steps are taken where only one is necessary, are not to be commended.

Complementary addition pure and simple, combined with equal addition as a "borrowing" device, is advocated at some of the Universities, especially where much work in logarithms has to be done. Instances are known where greater speed and accuracy have resulted from a change from the subtractive to the additive attitude.

The additive view is strongly urged by Mr. J. G. Hamilton. He thinks that the subtraction method should be discovered by the child: the steps being indicated by the following examples:

<p>STEP I ... <math>\begin{array}{r} 4\ x \\ x\ 9 \\ \hline 86 \end{array}</math> } add.</p> <p><math>\begin{array}{r} 159 \\ \hline \end{array}</math></p>	<p>STEP II... <math>\begin{array}{r} x\ x \\ 4\ 7 \\ \hline 143 \end{array}</math> } add.</p>	<p>STEP III.</p> <p><math>\begin{array}{r} 1\ 4\ 3 \\ 4\ 7 \\ \hline x\ x \end{array}</math> } add.</p>
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The "carrying" or compensating step is naturally adopted, with no need for more explanation than the "carrying" in simple addition.

It is not for me to judge this method on *a priori* grounds, but its advantages are sufficiently obvious for us to declare a true bill in its favour and give it at least an experimental chance in a few schools.

*On the Importance of Tables.*—It has already been shown that the facility in working addition and subtraction mainly depends upon a ready knowledge of the addition table.





table has always received a certain amount of attention. In bygone days it was systematically memorized by frequent simultaneous repetition; and even at present the chanting of the tables, although less widely adopted, is almost the only means that is employed. But this chanting of the tables is open to several objections.

Memorizing of all kinds depends upon the fixation of a habit-series; and the limits of the series should be clearly defined. Each formula, such as  $4 \times 7 = 28$ , constitutes a self-contained system, and it should be so memorized as to be completely usable without reference to preceding formulæ. In other words no unnecessary associations should be set up. To associate by rote memory  $4 \times 5$  with  $4 \times 6$ , and  $4 \times 6$  with  $4 \times 7$ , &c., is a superfluous, if not an injurious, bit of mental mechanization. Chanting tends to establish these useless associations.

Another objection is that the speed of this simultaneous repetition is far too slow for the economic fixation of habit. The effect of speed upon mechanization, although not generally recognized, is considerable. If, for instance, a passage of poetry has to be memorized so as to render its repetition automatic, the repetition of the lines at maximum speed has been found, in my own case at least, to diminish the number of repetitions necessary. It has probably something to do with the span of attention.

A third objection to the simultaneous chanting of tables is based upon the liability of the attention to wander during the repetition. Attentive repetition is far more efficacious than the inattentive kind.

Finally, there is the objection that may be urged against all kinds of simultaneous class work; that is, that it makes no allowance for individual differences in the mode and rate of learning.

There are experimental grounds for believing that the method of individual muttering—a method which unfortunately seems to “get on the nerves” of some teachers—is considerably more efficacious than the method of concerted repetition.

There are two methods of memorizing the tables which I have reason to think would prove effective—methods which are not exclusive but supplementary. *Both* might be tried.

(1) Take, say, two items per diem in the addition table, such as  $7 + 8 = 15$  and  $4 + 6 = 10$ ; and two per diem in the multiplication table, such as  $7 \times 8 = 56$  and  $4 \times 6 = 24$ . If this be systematically done, and past work frequently revised, the whole will be learnt in less than five weeks. If only one of each be taken per day the whole can be mastered in less than three months.

(2) Learn by applying. Put, for example, the 7 times table before the boys and let them work *very rapidly* a large number of sums involving multiplication by 7. Of the two methods this is probably the better.

*On the Importance of Practice, and the Claim of the Individual.* That the principles of number should be intelligently taught; that they should be recognized by the pupil as rooted in the experiences of

everyday life; that they should be learnt and applied with understanding; that they should frequently be presented in novel combinations—these are matters upon which there is now no divergence of opinion. But when we ask the questions: Should every exercise be given in concrete form? Should the problem dominate the arithmetic lesson? we get a variety of answers.

There are many who believe—there are more who wish to believe—that sufficient practice in the mechanism of computation is gained by working problems and problems only. But whatever opinion one may have held ten years ago on this matter, if one has followed the recent development of mathematics in the elementary schools one cannot help being forced to the conclusion that such practice is insufficient. Ciphering, in its rudimentary forms, is so useful an art that proficiency therein is justly regarded as one of the essential aims of an elementary school, and to discover the most economical means of achieving that aim, without doing violence to the pupils' instincts and interests, will ever be one of the central and vital problems of teaching.

It is not fair to argue that since the excessive and exclusive grind at mechanical arithmetic which characterized the period of payment by results was distasteful to the pupils, mechanical arithmetic is in itself distasteful. Indeed, many children share the opinion of the little girl of my acquaintance who says that she likes sums but does not like sums about John.

A noticeable feature of the present arithmetic course is the absence—or at least the infrequency—of the pure practice or drill lesson. From having all the lessons practice lessons we have come down to none. The custom of wrapping up numbers in abundant verbiage has become so inveterate that the mere sight of a naked number gives some of us a sort of shock. Some time ago I was reproached by a teacher for asking a little girl in an infant school to add 2 and 3. All departure from the concrete has come to be regarded as wicked. We have in consequence an ounce of arithmetic to a pound of padding. I have seen a teacher spend ten minutes over this little question in mental arithmetic: "If 80 birds sat on a tree, and 30 of them flew away, how many would be left sitting on the tree?" Laboriously she wrote it on the board, and persistently she checked all attempts at answering until she had explained the situation to the point of boredom.

Another factor unfavourable to progress is the non-recognition of the essential heterogeneity of any collection of children, however carefully chosen. Any seeming homogeneity in a class is both superficial and temporary. However much the units may resemble one another in their present attainments they will differ enormously in their capacity for work, and consequently in their rate of improvement. If they appear like one another to-day, they will appear unlike one another to-morrow. Although this fact has been clearly demonstrated by others,\* I have taken steps to verify it for myself. Three classes in a girls' school were

\*See, for instance, Search's "Ideal School," pp. 29 and 33.



allowed to work through the exercises in their arithmetic text-books at their own pace, for half-an-hour per day. The results were as follows:

						CLASS		
						A	B	C
Number in Class	...	...	...	...	...	50	46	42
Approximate age of Children	...	...	...	...	...	10	12	13
Number of half-hour Lessons	...	...	...	...	...	27	26	23
Average total number of sums worked correctly...						206	145	181
Highest Score	...	...	...	...	...	390	250	514
Lowest Score	...	...	...	...	...	95	70	24
Mean Variation	...	...	...	...	...	57	34	87

It would be difficult to find a school more carefully organized—a school where the children in a class were nearer the same level—and yet the variability in their rates of working is seen to be enormous. In the highest class the best girl was able to work more than 21 times as fast as the worst; and although this amount of disparity is exceptional, rarely will it be found that the fastest in the class does not work at least three times as rapidly as the slowest.

It will be seen that, taking the three classes together, on an average 7 sums per child were worked correctly in half-an-hour. Five girls in the top class were able to do more than double this average. It must not be thought that the exercises worked were of an easy type, or were of a merely mechanical nature; they were continuous examples from McDougall's Suggestive Arithmetics; and these books are above, rather than below, the average in difficulty.

A careful investigation of the methods of teaching arithmetic at present in vogue in elementary schools has convinced me that the most serious and prevalent defect is the excessive use of the blackboard, both for setting exercises to be worked by the class, and for exposition—for explaining, and exemplifying, and correcting.

When we consider that it is rare for a class working from examples written on a blackboard to get through more than four sums during a lesson of 45 minutes (that is, half as long again as the lessons referred to above) it becomes obvious that the individual scholar is not working at anything like his normal pace. I do not go so far as to urge that a child should *always* work at the highest pressure, but I do submit that he should *sometimes* do so.

It is often the practice of the teacher to write an example on the board, and set the whole class to work it on paper. After all have finished (note the waste of time on the part of the brighter children) the sum is marked. If about one-third of the class gets it wrong, the teacher, as a rule, works it himself on the blackboard, or gets the class to work (or to seem to work) it with him. This is idle time for two-thirds of the class; and it is not the best method of correction for the other third. More often than not the mistakes are due to carelessness on the part of the pupil, or to an imperfect knowledge of the tables; and effective correction depends on individual effort rather than on blackboard explanation.

An arithmetic lesson is occasionally taken up by the teacher working one or two examples on the blackboard with the class, the children afterwards copying them out in their exercise books. The concerted appearance of this work is illusory. The work is really done by the teacher and a few of the more alert pupils. The copying out is of little value except as a relaxation from the boredom of watching other people work.

These practices are by no means universal, nor do they imply that the instruction is mechanical and perfunctory. In making the criticisms it is but fair to record my conviction that earnest efforts are almost universally being made to vivify the instruction and to bring it into line with modern educational ideals, and that whatever faults exist are due not to lowness of aim, but rather to a misconception of how a high ideal may best be approached. The spirit of the Suggestions to Teachers and of the Report of the L.C.C. Conference on Arithmetic has permeated the majority of schools, and is doing incalculable good; but at the same time many sound practices of the past have sometimes been forgotten, and the new conditions that are developing with the gradually diminishing class and the more rapid movement of pupils have not been met by a corresponding change of method. That change may briefly be described as a progress from class teaching to sectional teaching, and from sectional teaching to individual teaching—in fact from larger to smaller units. The ideal teaching is, of course, individual teaching, and Rousseau, in his “*Emile*,” assumes as a principle: one teacher, one pupil.

It will be seen that “blackboarditis” (if I may be permitted to call it so) arises from too ardent and sanguine a desire to preserve the unity of the class—from the belief that the individuals forming this unity should work at the same rate, and progress at the same rate. One teacher with whom this matter was discussed not only held this doctrine, but strictly maintained that the pace should be that of the slowest pupil. This indeed seems to be the only logical form of the doctrine. It is clear that the average pupil (if there be such) cannot set the pace, as that would leave about half the class in the lurch. In actual practice a small number is recognized as forming no real part of the body of the class, and is labelled the “tail end.” The “tail end” is left out of account, and the pace is virtually fixed by the slowest pupil among the remainder.

But it is clear from what has already been said that the doctrine of the homogenous class ought to be abandoned, and the teachers should devise means of securing the maximum of healthy effect from each individual child.

That it is necessary to devise means is obvious when we consider the size of the class and the limited time and energy at the disposal of the teacher. He cannot possibly devote the necessary amount of personal attention to each child. The solution of the difficulty lies in the delegation of his powers, and in fostering in his pupils a sense of



responsibility. We have not yet discovered the extent to which we can trust the pupils. By adopting a general policy of mistrust, by never allowing a child to mark his own, or even another child's, exercises, by making no child responsible for anybody's conduct or progress but his own, by retaining all corrective and coercive powers in the teacher's hands, we gain certain advantages; we simplify matters, we minimize the likelihood of abuse of authority, and we cultivate in the pupils the virtue of obedience. But we lose much more than we gain. We fail to secure normal and healthy progress, we fail to foster respect for an internal as distinct from an external authority, we fail to cultivate the power to rule wisely as a balance to the correlative virtue of obeying wisely, and we sacrifice the brilliant and the stupid to the mediocre. The surprise with which we view the success of the prefect system among elementary school children is itself a mark of our traditional mistrust. The possibilities of self-government and self-culture among school children will, I believe, when fully realized, provide the key to the solution of a large number of the difficulties which press upon the teacher at the present time, and which seem to put an abnormal strain upon his nervous system. I am not here concerned with showing how precisely this delegation of work and responsibility may be effected in the arithmetic lesson (each teacher can best discover this for himself), but with suggesting the direction in which the ideal of individual development probably lies.

*Recommendations.*—In view of the facts and arguments set forth above, I venture to make the following definite recommendations:—

- (1) That the tables, both addition and multiplication, be by some means or other fixed in the memory early in the arithmetic course.
- (2) That the simultaneous repetition of the tables be superseded by individual learning, or, better still, by their application to examples to be worked rapidly.
- (3) That seriatim repetition be discarded after the structure of the tables is understood.
- (4) That adding by tables be the final objective in practising addition, and that adding by units, or by partial groups, or through any roundabout device, be regarded as a habit of a lower order, to be abandoned as soon as habits of a higher order can be engendered.
- (5) That speed of adding be insisted on as a means of pressing forward towards the higher habits.
- (6) That the method of equal addition be universally taught as the practical method of working subtraction.
- (7) That the method of decomposition be regarded, if taught at all, as a means of showing the correctness of the result arrived at by the usual method.
- (8) That at least one pure practice lesson be given per week.
- (9) That speed as well as accuracy be aimed at in the practice lesson.
- (10) That the terminal examination in arithmetic contain at least one straightforward abstract sum.

- (11) That each class be frequently practised in the work of all the lower classes.
- (12) That means be adopted to secure the progress of each pupil at his own natural rate.
- (13) That the blackboard be not used for setting out examples when text-books are available for that purpose; nor for working sums which could easily be worked by the majority of the class; nor for correcting errors due to mere carelessness. (The blackboard has, of course, its legitimate use for class and sectional teaching; it is only when it becomes a means of preventing individual effort that its use is open to objection.)
- (14) That the practice of copying in the exercise books examples worked out on the board be discarded.
- (15) That much of the responsibility of marking exercises be, with due reservations, and precautions, delegated to the pupils.

### A NOTE, CHIEFLY ON SENSE TRAINING.

BY PROFESSOR CULVERWELL, DUBLIN UNIVERSITY.

THE *Journal* has recently been taking a somewhat disparaging line with regard to definite sense training, and something ought to be said in answer. As several of the criticisms have been directed to passages in my "Montessori Principles and Practice," it would seem that some obligation to make the reply rests on me.

In the *Journal* for March, 1914, Professor Spearman, on p. 253, objects to the "ambitious claims" that I have made for sense training: "We have lately been told," he writes, "that 'sense training . . . is really brain training,' and therefore 'would lead to a higher average of mental equipment,'" and he refers the reader to p. 59 of my book. But by omitting a good deal of the sentence (beyond that indicated by the asterisks), and inserting a 'therefore' of his own, he has perverted the meaning of the passage, which runs thus:—" . . . Sense training . . . is really brain training, and though it is far from the highest type of brain training, it is subservient to it—there is the strongest reason to believe that a higher average of sense and muscle training in the earlier years would lead to a higher average of mental equipment in the later years, and it would undoubtedly lead to a higher average of industrial efficiency."

Now, in defence of the passage. Surely Professor Spearman does not mean to deny that sense training is really brain training, or, when he says "we have lately been told" it, to give me credit of announcing what is a commonplace of physiology? Or does he doubt that sense training is "subservient" to the highest type of brain training? It is beyond all question that if there were *no* development of the senses there could be no mental equipment. I mean *none*, not merely no

formal training in school, but none at all. The mental level of a person, if we could call him a person, would be zero, if he had never felt, seen, heard, tasted, or smelt anything, except passively, i.e., without having to make adjustments of the same organs. *Some* sense training is therefore essential, or "subservient," to any, and therefore to the highest, mental development.

It would, indeed, be quite unjustifiable to assert that the degree of mental development is proportional to the amount of sense and muscle training. Had I said that, Professor Spearman's *therefore* would have been justified. All we can safely say is that, *up to a certain limit*, the degree of mental efficiency increases with the amount of sense training. It is almost equally certain that there is a limit beyond which sense training would interfere with mental development, if for no other reason than that it would prevent sufficient time and attention being given to mental work of a more abstract character.

Hence the conclusion stated in my paragraph is a matter of practical judgment, not of certainty. In my opinion the average child has not yet reached the limit; I believe the weight of evidence indicates that he is very far from it, and that there *is* strong reason to believe that a higher average of sense training would lead to a higher average of mental equipment. Some reasons for this belief will be given shortly, in answering Professor Green.

Further on, in the same number, Professor Green reviewed two Montessori books, Dr. White's and mine, and I venture to submit a protest. In "reviewing" the former, he just extracted the failures she noted, without mentioning any of the successes she portrayed—which gives the reader a very distorted idea of the book. In regard to mine, he asked several questions, which I shall try to answer.

He enquires how I know that the hardy savage does not suffer from the effects of a draught. I might give a verbal reply—that if he did suffer he would not be hardy; and if there be any hardy savages who do not suffer from it, my point is sufficiently made. The question, however, really goes with another, viz., what evidence have I for the statement that "our sense organs are far below the standard for which nature designed them." The statement is evidently a popular one—nature doesn't really "design" anything, and the meaning put on it must be sought in the context. The paragraph is intended to show that we ought not to expect that the promiscuous training which the common experiences of life afford gives a really satisfactory result. "Our senses are trained just so far as we use them, and we do not generally use them beyond the average needs of our daily life. For the child of a civilized race, these needs are restricted; society guards him against the worst consequences of his deficiencies, so that there is little inducement for him to develop his senses beyond the lowest requirements of civilized life. Thus it results that most of us are but poorly equipped with the means of observation"—and here follows the sentence which Professor



Green questions. The difference between us is one of fact. Professor Green's view, given by implication here, and also in his Address published in the previous number of the *Journal*, appears to be that the indefinite training of everyday life is sufficient. Against this view I enter a protest.

In the first place, it seems irrational to suppose that there is a pre-established harmony between the needs of each particular child and the stimulus to sense and muscle training supplied by his especial environment. For some children the environment is rich in sense stimuli—too rich at times, e.g., at Christmas. For others, e.g., workhouse children, it is probably far too dull all the year round. Surely, then, we are not entitled to take the position that the training afforded by such different environments is always sufficient—that definite training is never required? In other departments, e.g., mental training, physical training, artistic training, we do improve on the training which "nature" supplies.\* Is it, then, reasonable to suppose that sense and motor development follows a law of its own, unlike that of any other department? Surely we are not entitled to make any such *a priori* assumption.

The question is one which can only be finally decided by experience or experiment. Evidently, however, our experience is not yet sufficiently definite, since opinions differ so widely; we must therefore endeavour, by a general discussion, to aid in deciding the practical question—to train or not to train?

Observe, then, that the child, left to the casual training of everyday life, will almost inevitably adopt bad ways of doing things, because he does them without attention, and without knowing what is the best way to do them—he just does them "anyhow," and so he is never accustomed to get out of himself work of the standard to which he might reasonably aspire. But if he be *intelligently* trained in the use of senses and muscles in a few combinations, so that he realizes that it is helpful to think about what he does, then he may carry over to other combinations the habit of thinking about what he does.

This is a point which seems too often neglected by those who, like Professor Green, are content to leave the training of the senses to the haphazard experiences of everyday life. We know that there are two ways of acquiring *facility*—of learning to *do* things. In one, we are in the perceptual stage, as when we are learning to balance on a bicycle. In the other, we direct our movements through conscious intelligence; first we think, then we act, our will directing our muscles to carry out its behests, as some would say. The latter is a distinctively human type of action, although it may probably be found to some extent in the higher animals. The former is the way animals learn; and children, left to themselves, do for the most part acquire skill on this lower or perceptual plane, and there is strong reason to think that skill thus acquired does little for mental development, as compared with skill

\*We should, however, hardly use the word *nature* for the artificial environment in which most of us live.

acquired under conscious mental control and direction, or, in other words, skill acquired in the course of *definite sense training*.\*

Thus there are two arguments in favour of sense training—1st, it is much more likely to lead to the application of intelligence than the incidental sense training got in the general experience of life; and 2nd, that as there is only one *best* way of doing a thing, the child, left to himself, is very likely to get into the habit of doing it in one of the thousand and one bad ways, and thus to grow clumsy.

Certainly the want of grace and ease in movement, even in walking, which is a most essential activity, and one which every child practises *ad lib.* under the calls of the environment, does not indicate that, *in civilized life*, "nature" does all that is required for the training of the body. A comparatively small amount of careful *attention* to the mode of using the muscles in walking produces a very marked improvement. This is in part due to *sensory* improvement, because all motor adjustment must necessarily be based on sensory stimulations. Moreover, when we see the immense differences in children—some with good powers of sense discrimination, and muscles under good control, and others with the reverse, we must explain the difference either as due to environment or else as congenital. Unless we adopt the latter explanation as complete and sufficient in all cases of clumsiness, we are driven to conclude that in many cases at least the natural environment does not supply sufficiently good sense-and-muscle training, in which case we are compelled to admit that sense-and-muscle training of a formal kind is desirable, in order to supplement the training given by the environment.

The words, "in civilized life," *italicized* above, lie, as I believe, at the root of Professor Green's error. I am not concerned to deny that where the struggle for existence is very severe, the surviving adults may have their senses very well trained for the main purposes of existence. But this is because those who do not reach to the required standard are eliminated. With us, we guard the inefficient against the consequences of their deficiencies, and thus we take away the spur which alone gives security that the training of nature shall be sufficient. Professor Green has not allowed for this. He appears to believe that children naturally give their senses all the exercise they need, and that they give the right kind of exercise. Doubtless they do in many cases give their senses the exercise their narrow circle of *needs* requires, just because it is narrow—very narrow, for instance, if the mother or the nurse do everything the child might do for himself. But in such a case it will not be wide enough to enable him to do what is needed for himself, especially in the more difficult situations of adult life.

Professor Green asks a third question—whether I want "each of the senses trained to their highest potential?" My answer to that has

\*Here it may be necessary to point out that there is no confusion of thought in speaking of learning to do actions as if it were definite sense training. It is. The only way to train the senses is to train senses and muscles at the same time. Sense adjustments involve muscle adjustments, and *vice-versa*.

been already made plain, viz., that there may be an excess of sense training; and I am confident that to train each of the senses to its highest potential would be mere folly.

Professor Green objects that I "avoid the fundamental question whether mind is a synthesis of sensory activities." I am never quite sure whether I (or anyone) really understands what the exact meaning of such expressions is, but I think the quotation which Professor Spearman mutilated gives my position with sufficient clearness, viz., that senses and muscles must be developed if mind is to be developed—no one can reasonably question this—but that other activities are necessary seems evident enough, especially for the higher development of mind. (On such ultimate matters, however, statements of this kind are to be regarded merely as working hypotheses and expressive of our ignorance rather than our knowledge.)

Judging from the number of notes of exclamation in his comments on what I have written about spontaneity, it seems to have disturbed Professor Green not a little, and this impression is confirmed by the fact that his quotations, like Professor Spearman's, somewhat misrepresent what was said. "We must recognize that, with fuller knowledge, even the concept of spontaneity itself *might have to be abandoned*," is paraphrased into "will probably disappear altogether;" not, perhaps, a very important error, but why misrepresent at all? Again, Professor Green writes: "The more molluscos and the less vertebrate we are, the greater our spontaneity! Surely such a result is something more than a verbal proposition." From this it would be supposed that I had made that statement and then declared it to be a verbal proposition. I made no statement in that form, or bearing any such interpretation, nor is it an approximate expression of my views. Certainly it does not bear the remotest resemblance to what I stated to be a verbal proposition, viz., that the dictum that "education must be based on the spontaneity of the pupil" was merely "a verbal proposition until we know the details included under the statement."

As regards the Montessori system, these latter criticisms were quite minor matters. Professor Green did, however, mention two more important points. In the first place he believes that a child should always recognize the *end* for which preparatory exercises are given. He believes it so strongly that he condemns the Montessori technique for writing on the mere ground that the children, in learning to remember shapes, do not know that the memory will be a distinct advantage to them afterwards. I would ask him, why? On what authority is that view held? If the work *itself* be of immediate interest, are we always to shunt the interest off to the distant result? Are we always to strive to eliminate the element of surprise? Even with adults his rule does not hold. We take a friend out for a walk, and let the view, which was all along *our* objective, burst suddenly on him when the proper point is reached. Nay, we may even seek to divert his attention, so that he shall not observe the scene at all till the right moment. We know that



if beforehand we told him of our purpose, his enjoyment and appreciation would be cut down by half.

Professor Green is on safer ground when he repeats the objection to apparatus. There *is* a great risk that the apparatus will kill the spirit of the method. With unintelligent teachers it certainly will. Against this danger, if British authorities adopt not only the principle of freedom in education but, with it, the Montessori technique, we must only try to set the intelligence of the teacher and—almost equally important—the freedom of the teacher, freedom from the mechanical routine of a pre-ordained technique, and from too definite bureaucratic control.

Whether the school will be founded on greater freedom or on more rigid discipline than heretofore, depends chiefly on the issue of the present war. If the power of the military caste is ended, and lasting peace is assured, then men will look on education with new eyes; the visions of the prophets may become the commonplaces of the man in the street, and all good things may be possible.

## PROPORTIONAL TRANSFERENCE AND THE THEORY OF COMMON ELEMENTS.

By S. F. JACKSON, M.A., THE TRAINING COLLEGE, SUNDERLAND.

A YEAR ago in this Journal Professor Spearman summed up the present position of the discussion on Formal Training. Therein he puts the case for a theory of limited transference ingeniously, by indicating certain qualifications with which a belief in training, effective "equally and in all directions," must be accepted. The latter theory, one believes, never existed before the present contention began.

He assures us, in the first place, that the question of transference "must be regarded quantitatively." Training is transferred "from one material to another but only in proportion to the similarity between them." And further, that to be effective "these common elements" whose sum constitutes the similarity "must be separable from the complexes in which they occur."

As they stand these two propositions are incompatible. And, as I hope to show in this paper, the former is no more than a description in spite of its categorical imperative; the second is not established by the experimental evidence. Throughout I propose to deal with the data supplied by the experimental records, and to avoid excursions into theory. Professor Spearman assures us that the facts, "especially as elicited by experiment," are "perfectly unanimous and lucid." I quite fail to find them so. They are ambiguous; and, according to the principles laid down by Professor Spearman, highly anomalous.

I. The first principle is that transference must be regarded quantitatively. Not the bare occurrence of transference but its "amount is the important matter." One must first ask what "amount" implies

here. Is the word used figuratively and in description, or is it meant to apply literally: "amount" that can be computed mathematically? Suppose we have two tasks. We analyze them into what we conceive to be their elements. We count these elements. From the number of elements common to the two we are able to compute the effect of the doing of the one task on the attempt to do the other, in the matter of effort and time. Or, in general, that we pass from experience to experience according to a definite law which can be stated in a mathematical formula—provided we can be sure of our "elements"—and a simple one at that, namely, arithmetical proportion? We are not, I take it, to interpret the proposition as a kind of laboratory version of "relative suggestion," as enunciated, e.g., by Professor Stout.

Dr. Spearman illustrates his conclusion by three cases from Sleight's investigation into Memory and Formal Training; and he clinches the matter by an analogy from the theory of light. Now, if we look through the accounts of what experiments have been made in connexion with this topic it is possible to select quite a number of cases that do not confirm, or conform to, this theory of proportional transfer. I select the following. The list is by no means exhaustive.

A. Thorndike and Woodworth, *Psychological Review*, Vol. 8, 1901.

In the first of these articles, pp. 247-261, and in the third, pp. 553-564.

In all the experiments described in these articles, we are told that "the influence of improvement in a function on other functions closely allied to it" is tested.\* The question we are concerned with is whether the improvement is "proportional."

1. *Area Test Series*. Observers were trained in estimating the areas of a series of paper rectangles ranging from 10 to 100 sq. cm. in area. They made very definite improvement during the course of practice. The tests were in estimating the areas of rectangular figures of varying sizes, and of the areas of figures of other shape, triangles, &c., over a range of size.

If we look into the numerical results for these tests they show that there was not infrequently more improvement in dealing with figures unlike the training series in size and shape than for those nearest in size and shape. Commenting upon the figures as a whole, Coover and Angell remark, "It is not clear that the figures show anything beyond great individual differences" (*American Journal of Psychology*, vol. 18).

We would expect, if the theory is sound, to find the results of the *after-practice* test arranged along a curve with a fairly regular sweep. But we find nothing of the kind. The curves given for three observers (p. 259) are very irregular, with sudden rises and falls, "more irregular than can reasonably be attributed to chance." They are curves the nature of which is generally believed to indicate a process so highly complex as to be beyond mathematical analysis.

\*Professor Thorndike means by "function"—"the mental basis" of any activity; "it is used for all sorts of qualities in all sorts of performances."

The authors, in reviewing the results of the first series of experiments, are driven to this remark: "In the training series we have a considerable number (10 to 40) of judgments of each of a lot of magnitudes differing from each other by slight amounts. We have computed the accuracy of the judgment of each magnitude (as measured by the error of mean square) and then compared the accuracy for each with that for the adjacent magnitudes. We find many instances in which the difference between the errors for adjacent magnitudes is largely in excess of the probable difference. And the number of such instances greatly exceeds what can be expected from chance" (op. cit., p. 257). And in a footnote to the curves to which I have referred we read "The fact that judgments of nearly equal magnitudes may show very unequal errors throws doubt on all curves drawn from the judgment of only a few normals." It surely throws greater doubt on the theory that transfer is in direct arithmetical proportion.

2. I select two examples—the number might easily be trebled—from the third article of the series.

(a) A period of 90 minutes practice in marking verbs in English apparently improved an observer's skill in marking other parts of speech, in both the time taken and the number of errors made.

With the same observer a period of practice of 123 minutes in marking prepositions made him less effective in marking other parts of speech.

At another time, the same observer was trained in marking verbs for 90 minutes, and then in marking prepositions for 30 minutes. He was tested in marking words of over seven letters, and words of more than five letters. The results of the second test show a marked improvement on the first.

We can scarcely regard evidence of this kind as confirming the theory of quantitative transference. Practice in finding verbs and prepositions produces more effect on the exercise of marking words with more than seven letters than does practice

(a) in marking verbs, produce on the exercise of marking other parts of speech,

(β) in marking prepositions, produce in the exercise of marking other parts of speech.

Practice in marking verbs is in some degree a training in marking other parts of speech. Practice in marking prepositions is a hindrance to that operation. Assuming the formula as proven we are committed to this: that the "functions" of marking verbs and prepositions are "more similar to the function of marking words" containing a certain number of letters than they are to one another. Two processes of—in the main—grammatical analysis are less similar to one another than is a process of counting the letters in words, and marking certain of them, to either of these processes.

An introspective analysis, the last resort in a psychological investigation, does not confirm this.



(b) A second example:—

Observer W., we read, was trained for 250 minutes in marking verbs in an English text (op. cit., p. 560). Two tests were used:

(a) Marking various parts of speech in an English text. The figures for these are:—

Time for test before training 42 min. 36 sec.—errors 15.

„ „ after „ 40 min. 55 sec.— „ 50.

Percentages 97 and 333.

(β) Marking parts of speech in a French text.

Before training: Verbs, 272—3; Adjectives, 407—3; Adverbs, 440—10.

After „ „ 336—5; „ 402—4; „ 294—8.

or, in totals, *before*, time 1219—errors 16,

*after* „ 1132— „ 17.

Percentages 93 and 107.

The figures give evidence of the practice having greater effect on the function of picking out parts of speech in French than on the function of picking out parts of speech in English. And looking more closely, we notice that of the three kinds of words in the test on the French text we see less loss of transference in the case of adjectives and adverbs than in the case of verbs.

On a general view of the operations involved, most of us would be inclined to suppose that there is a greater “quantity” of similarity between two processes of grammatical analysis in the same language than between two such processes, the one in one language, the other in another. And that a process of training of marking verbs in English was “more similar” to a process of marking verbs in French than to the marking of adjectives and adverbs in French.

3. There is another definite case of exception from the rule that “the amount of improvement is in proportion to the amount of chance” in the second series. A glance at tables 4 and 5, pp. 386-7, will show that there is no clear evidence in the numerical results of anything that can be described as “proportional” in any exact sense. While, when we come to the figures standing for the attempts to estimate the areas of 240 sq. cm.—the largest area used—we find they are actually better than for areas much nearer the size of the practice areas. The exception is admitted with the remark that “it cannot be due to chance.”

Whatever we may think of such experiments and the numerical results thereof, they seem to offer no sound evidence of transference being in proportion to the number of similar elements in the two functions engaged. Yet they were designed to this purpose.

B. —Let us now take three cases from Sleight’s work (*British Journal of Psychology*, Dec., 1911):—

(a) On p. 422 we see that “children who practised poetry show no improvement in the poetry ‘test’ relatively to the others who did not practise poetry.”

(b) “Similarly with those practised in ‘tables’—a material which was selected as practice medium on account of being apparently closely

allied to the test subject of 'dates.'" That is, there was no evidence of transfer between two experiences which were purposely selected as being similar.

(c) Further, we read (p. 423) that training in poetry had apparently a very pronounced effect in the test-subject "nonsense-syllables."

By way of contrast with this the training in "prose-substance" seems, in the case of a group of children, "to have left 'nonsense-syllables' entirely uninfluenced," and in the case of a group of students-in-training to have been positively detrimental.

But again, the training in "tables" apparently influenced positively the reaction to "nonsense-syllables" as much as did the training in poetry; and therefore much more than did the training in "prose-substance."

Now these three cases appear to be quite as cogent as those selected by Dr. Spearman, but by no contrivance can they be made to support his conclusion. Case (a)\* is directly analagous with his first example, viz., the case where children repeat a piece of poetry a number of times and are then asked to repeat the same piece from memory. In case (b) the "materials," "dates," and "tables" were selected because of their resemblance. Have we then to say that the resemblance is disproved by the numerical results? And with regard to (c)? Most of us would agree on a first-hand inspection that there is a "greater quantity of resemblance" between passages of prose and poetry than between either of these and a set of "tables." But from the results there must be a close resemblance between "poetry" and "tables." If we look at the results in the same tests with students—those quoted are for children—we find these numerical differences emphasized. And we find an explanation. It appears from the introspective accounts given by students that they were able to repeat the nonsense-syllables in a rhythm. They directly imported a rhythm from their experience of reciting poetry. But the device, though tried, proved ineffective with the particular piece of prose on which they were tested. This one point of similarity, a similarity we must notice which is not common to the material but which was made common under the pressure of a need, was more effective than the wide similarity between the learning of a passage of poetry which was clearly understood and a passage of prose also clearly understood.

There is evidence just as good against transference in quantitative ratio as there is for it, so far as the experimental results take us.

II. I have suggested that this law of "quantitative transference" was incompatible with the further principle that the common elements "must be separable from the complexes in which they occur" before transference can take place. That they should be separable indicates that they differ in kind from elements inseparable. It is no longer the

\*In a critical review of Mr. W. H. Winch's experimental work, Dr. Sleight (*British Journal of Psychology*, p. 400) seeks to discredit this kind of test on the ground that it is no more than a "rote memory" exercise. I believe that transference is involved from one repetition to the next, until the whole is organized into what may be described, perhaps roughly, as a motor-habit.

amount of resemblance but the significance and nature of the resemblance; not the number of common elements but the peculiar potency of some one element to effect that still mysterious process whereby the mind passes from one context to another.

Without for the present raising the slightest question of theory, we find this incompatibility confirmed in the experimental records.

(a) I have already mentioned one case above, viz., the use of rhythm in learning nonsense-syllables after a training in learning poetry. "The introspections," says Sleight, "upon the method of memorizing the nonsense-syllables are unanimous in according to rhythm the predominant position in the process . . . It appears, therefore, that the absence of rhythm in the practice exercises, and its predominating presence in the nonsense-syllable test, rendered the other common elements inoperative" (p. 434). And we find the theme repeated throughout Dr. Sleight's thesis. It is never the number of elements which we distinguish as alike in two situations, but always some one or two similarities, to which the experimenter gives the name of *process* elements. I select three quotations directly bearing upon the point; they are all conclusions from an examination of the introspections of observers.

(b) "Certain elements common to two functions . . . are more easily separable from their associative connexions. They may owe this position to the fact that they form a prominent constituent in many such functions, and are being brought continually into exercise. They become dissociated by means of varying concomitants. There are, for example, rhythm; visual, auditory, and kinæsthetic imagery; concentrated attention to material of a certain kind. The frequency of occurrence of such prominent process elements, where other conditions are not too strongly opposed, may enable the observer to disintegrate the complex function and to make use of the practice element in another connexion. We see therefore that the amount of improvement in practice capable of producing a given amount of improvement in any other material must vary according to the number and nature of the common elements, and the individual mind" (op. cit., p. 441).

(c) And further:—"It would appear that an external similarity, such as material, is not able to produce transfer, and may indeed without other factors be of but little importance. Other similarities such as method of procedure, imagery, special form of attention, logical organization of matter, have proved considerably more important" (op. cit., p. 444).

(d) Again, "Great similarity may be counterbalanced, or more than counterbalanced, by important differences. In other words, a difference in the midst of many similarities may be sufficient to prevent transfer" (op. cit., p. 445).

I make no comment on the implications involved in these passages, but offer them as experimental evidence against the theory of quantitative transference in proportion to the number of common elements.



We find exactly the same breakdown in the Thorndike experiments. There are no introspections from observers. Professor Thorndike assures us that there is no use in examining individual cases. But in speculating as to what there was in one function to influence others, he remarks, "There was first of all the acquisition of certain improvements in mental standards of areas. These are of some influence in judgments of different shapes. We think 'This triangle or circle or trapezoid is about as big as such and such a rectangle, and such a rectangle would be 49 sq. cm.' The influence here is by means of an *idea* that may form an identical element in both functions" (*Psychological Review*, p. 256). Here we notice that it is not "identical motor elements" or "imagery" which would present many similarities in the two functions—if only two are engaged—but a highly complex process of mental cross-reference, an *idea* involving judgment as to the relations between the data of a past experience and those of a present.

Many other cases could be cited from every experimental record that I have been able to come by. There are several entertaining pages of examples directly to the point, viz., that there is some one "element" which has more effect than any number of others in effecting transference, in an article by Professor Carveth Read in the same volume of the *British Journal of Psychology* as Dr. Sleight's thesis, from which I have so frequently quoted.

III. Further, not only are the two qualifications of the general theory of training so far dealt with incompatible, but the second—the need for separableness—is by no means clearly established by experimental evidence. The cases cited by Professor Spearman are ambiguous; in this sense, that each of the common elements he mentions, which by "careful cultivation" are developed into a *method*, or into a *general maxim* or *ideal*,\* stand for certain classes of relations-in-thought, by and through which transference is effected (Spearman, op. cit., p. 252). To call them common elements of two functions is an inadequate way of describing them. We noted that Dr. Sleight was driven to distinguish these as "process elements" and "functional relations," and to insist that such elements were of greater significance than "other similarities." But waiving the point as to whether we mean anything that is psychologically sound by calling these "elements," it cannot be denied that they imply relational systems of ideas. The point at issue is whether the operative relation has to be explicit in consciousness before transference takes place. That transference will take place more securely, more rapidly, more economically, when we have a *clearly conceived method* or *ideal* is the rock on which every system of education that is at all tinged with the notion of adaptation is built. But whether transference disappears when the "elements are quite inseparable" is a proposition that needs interpretation. There is evidence against a clearly conscious separateness of the relation being necessary for transference; evidence from experiments rather more convincing than those of Squire and Reudiger.

\*An ambiguous term. In that every line of thought is to an end an ideal is present. The difference between the lesser and the greater is in the "value," and all that that implies, to the idealist.

(a) The first is from Sleight's enquiry. Dr. Sleight's summary is not quite consistent with his evidence. The summary reads as quoted by Dr. Spearman, viz., "to involve transfer the common elements must be separable." But on p. 440, in reviewing the introspections of his observers, Sleight remarks, "that the individual mind [s] were sometimes able to make use of the functional relation," some with knowledge of the exact point of similarity, others, without knowledge of the exact point of similarity, and "others *improved without any consciousness of the fact of similarity.*" (Improvement is accepted as evidence of transference throughout the thesis.)

One has no wish to hide behind an ambiguity; and this question of whether the similarity is always definitely present in consciousness when transference is effected is a vital point in the whole topic. But I gather from the general trend of section 6 of Dr. Spearman's article (p. 252) that he means that the separateness of the functional relation must be conscious; "a clearly conceived method" is very definitely a concept in consciousness. And certainly Sleight, p. 440, remarks that "unconsciousness of the identical factor does not always eliminate its influence." I have no doubt there is a solution, not based on experiment, of this apparent anomaly. Wundt, I believe, in dealing with mediate association, argues that the mediating idea must have been in consciousness although not noticed or perceived. To say that it is separable, and raised into the white light of a "clearly conceived method," asserts that it is not only perceived but raised into a function. But I am dealing with the experimental records, and Sleight's evidence is not consonant with his conclusion.

(b) We find a useful commentary on the point in Dr. Carveth Read's experimental enquiry to which I have already referred. He has examined at some length the function of relations-in-thought, and has had occasion to refer to the spontaneity of much analogical reasoning even of a strictly rational kind. In summarizing the introspections of his observers he draws this conclusion: "We may learn from this how profoundly relational systems determine our thoughts even without our being conscious of them. Here we see the influence of an assumption concerning proportion amongst qualitative terms, which has never become a recognized intuition and has never been formulated" (*British Journal of Psychology*, vol. 4, p. 375; see further, pp. 380-381).

IV. It appears then, I submit, that there is evidence in these experimental accounts against transference in quantitative ratio, as good, or as indifferent, as there is for it; that it is not the number of elements, as the term is used in the accounts, which determines the direction of transference; and that the necessity for the separableness of the effective element is not proven.

There are a number of points in the situation that appear obscure.

In the first place, one is concerned as to how we have to regard these numerical results. Have we to take them as indicating the degree of similarity between two functions? Are we to regard them as

confirming, or as confounding, our first judgment as to the similarity or dissimilarity of two tasks and the probable influence of experience in the one upon the learning of the second? Or are we asked to look upon the numbers as being exact measures of "function on function"? Dr. Spearman would, I take it, stick to the figures as against a description which enumerated points of similarity. From his second section (p. 251), and particularly from the concluding analogy, the figures are to be taken, not only as giving the pontifical sanction of figures to our first judgment, but as giving something approaching mathematical exactitude to the first judgment on the degree of similarity between the three grades of experience mentioned.\* But the figures are surely dependent for their meaning upon the introspections. As we saw, introspection revealed the use made of rhythm by the students in learning lines of nonsense-syllables. The investigators arrange and select their tasks and tests upon an introspective analysis. It does not appear to have been very thorough in many cases. And where the numerical results surprise them, they go back to introspection to find the occasion of the surprise. The figures, apart from the introspections, have neither point nor meaning. But as interpreted by introspection the figures in a general way coincide with the empirical theory that the greater the "fetch of similarity" between two bodies of experience the more readily will the human mind deal with one when the other has become known, and when the similarity has been perceived. Professor Spearman would have us take this descriptive principle as an established principle in exact science. It can now be expressed mathematically; because we know there are a number of "similar elements" in the two bodies of experience and the ease and certainty of the passage from the one to the other is determined by the number of these. This is presented as a serious theory, confirmed by numerical results; and not merely as a description. But if it is this, two questions remain which no experimental records have solved. How, in the first place, can we co-ordinate the psychical factors—one may assume the "elements" are mental—with the numbers which represent their combined result? Are the elements of equal value? How shall we be able to discriminate what part of the numerical total is the result of the operation of this or that element? Nothing less than this is required before such a theory can stand; that we are able to allow for each element in the function engaged its proper quantum of marks—a hopeless quest.

And, in the second place, what are these "common," "identical," or "similar" elements? The terms are used interchangeably. Can they be named? Are they elemental in psychological theory, or on some plane of analysis that belongs peculiarly to pedagogic enquiry? And if there is a level of analysis for pedagogical theory, and there might be good grounds for the position, can we apply to the elements of that level a theory of association and interaction which is no longer

\*I may be misreading Professor Spearman, but on p. 251 he compares the evidence of "actual introspection" with the evidence of "correlations," and refers to the latter as the "more direct evidence." Surely an unhappy perversion of things.

See further the closing sentence of the second paragraph of p. 251.



tenable in psychology in its more epistemological aspects? Can we justify a mechanical and quantitative treatment of these elements either practically or theoretically? And how can this be done? Until this is done we have no option but to regard this principle of quantitative transference through similar elements as no more than description. There is, throughout the experimental records, no thoroughgoing analysis of any of the complex mental operations engaged. The most exhaustive is to be found in the Sleight enquiry, on p. 442. It is an analysis of the function "practice in verse." There is no room here to quote the paragraph in full, but it is worth noting that the list of data given is not a list of "functional elements" but a description of the conditions which may have some influence in determining the numerical results. It is sufficiently to the point here to note that Dr. Sleight remarks at the close of his analysis, "Such an analysis cannot, of course, pretend to any degree of thoroughness." Elsewhere (p. 444) he assures us that in calling an element "common," "authors, of course, only mean that it is of a similar kind." In Thorndike we find examples of "elements" ranging in variety from the "width of column" (of a page of print), "similar distractions, &c.," through "habits of eye movements and stops" to the "idea" which is a judgment of resemblance noted above. "Identical elements" are defined as "mental processes which have the same cell action in the brain as their physical correlates"! (Thorndike, *Educational Psychology*, cap. 8). But we never know them by these marks, nor does it matter, "because there is rarely much trouble in reaching an approximate decision in those cases where training is of practical importance."

The theory of "similar elements and proportional transference" is a piece of rhetoric, and, as it stands, a mischievous analogy with certain operations in the exact sciences.

## A STUDY OF CHILDREN'S VOCABULARIES. I.

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THIS is an account of an investigation, extending in all over several months, of which the main object—an object which unfortunately, owing to a variety of causes, was not fully attained—was a comparative study of the vocabularies of children of different ages, and coming from different social environments. The subjects were the writer's three children, two boys and a girl, the J., H., and D. of this paper, and various children of the Kindergarten at 42 Gilmore Place, Edinburgh, which is maintained by the Edinburgh Provincial Committee for the Training of Teachers.

One part of the investigation was carried out with the writer's wife and himself as observers, and their own children, J., D., and H., as subjects. In this case the study of vocabulary was comparatively easy; the work may be considered as having been on the whole

successfully performed, and detailed results, which may be regarded as satisfactory and adequate, can be given. Matters are different with regard to the other part of the investigation. One of the demonstrators and two of the students from the Pedagogical Laboratory of the Provincial Training College at Moray House were detailed to carry out the study at the Kindergarten. Through no fault of the observers, the results obtained can hardly be described as quite satisfactory. The time at their disposal, and the opportunities for observation, were necessarily somewhat limited. It was hoped that they would be able to collect a number of individual vocabularies, representing children in the Kindergarten of different ages, from under three to five. It turned out that individual vocabularies could only be got by interfering with the ordinary routine of the Kindergarten to a much greater extent than was considered advisable or justifiable. Hence the vocabularies obtained were so obviously incomplete that the results can only be taken as indicating the scope and nature of the vocabulary of the Kindergarten child community.

#### THE VOCABULARIES OF J., D., AND H.

J. and H. are boys, D. a girl. At the beginning of the period over which the study of J.'s vocabulary extended, his age was four years six and a half months; at the similar time in her case, D.'s age was three years and seven months; and H.'s age, under like conditions, was two years and four months. In all cases the period of observation was limited to ten days. It was considered that a period of ten days was sufficiently extended to enable us to record approximately the whole vocabulary of the child, but it ought to be noted that, even on the tenth day of observation, J. gave as many as eighty new words. On the other hand, it must be remembered that a young child's vocabulary is increasing very rapidly, and hence, if too long a period of observation be selected, the observer may, towards the end of the period, be merely recording day by day the normal daily increase in the vocabulary of the child. With a long observation period the vocabulary would naturally require to be taken as at the end of the period. Our experience on the whole inclines us to favour a period of about ten days. A shorter period would certainly be inadequate. A longer period would certainly involve an increasing tendency towards recording again, through forgetfulness, words already recorded in earlier days of the observation. Even with the ten day period, this caused us a good deal of needless labour and waste of time.

Every word used by the children during the time of observation was noted at the time, paper and pencil being always carried for that purpose. Words, apparently understood, though not actually used, were not recorded. At first an attempt was made to distinguish between words used spontaneously by the children and words got by systematic exploration. This attempt was soon given up, because it was discovered that words got by systematic exploration one day might be used spontaneously the next, and no good purpose seemed

therefore to be served by the distinction, which also involved a considerable amount of extra labour. Picture books were the chief means of systematic exploration. In addition the children were placed in certain environments calculated to produce a certain group of words, and, further, words actually used were often followed up, so as to get all associated words known. As one would naturally expect, this procedure produced its chief effect among the nouns, but some effect was also produced among the verbs and adjectives.

The children are all rather bright children, and they have had good physical health from birth. There is not very much to record with regard to their time and manner of acquiring language, except perhaps in J.'s case. He began to speak at about sixteen months, and there was one rather interesting feature about this beginning. So far as we know, he never had a period of what one might call purely *glossic practice*, that is, repeating the sounds of words as mere sounds but not as real language—parrot talk. When he began to use words, they were real words; the period of *glossic practice* came later. He also developed very rapidly a rather exceptional control over his vocal organs, so that at the age of twenty-six months he could articulate without difficulty, and as clearly and distinctly as any adult, such words as "extraordinary," "hippopotamus," "Nebuchadnezzar," and some three months later he successfully negotiated "temporarily." The others both spoke at about eighteen months. They have not shown this facility of articulation, and H. least, but it has always been a rule of the household that "baby talk" should be avoided with the children, and consequently they both speak clearly and distinctly. As will be seen, there are few words in their vocabularies which are not current English words, and H. is the only one who uses a real "baby word."

As a result of some investigations carried out by him, and under his directions, Mr. J. C. Smith, H.M. Chief Inspector of Training Colleges, came to the conclusion that the vocabulary of a child of five, from a good home, would normally contain about 1,000 words, and might even extend to 2,000 words.\* So far as we are aware, the vocabularies were never published, but these conclusions are fully confirmed by our results, and we should be inclined to place the normal line even higher than 1,000. In J.'s vocabulary, which is appended, there are over 1,700 words. This includes a few proper names, which might, perhaps, be objected to as not really entitled to inclusion, but, after all, these do not make up for the words which failed to present themselves during our observation period, and, if we deduct them, we must still estimate the total vocabulary, judging from the data we have, as well over 1,700 words. If proper names are to be included, we might estimate the total vocabulary at about 2,000 words, since, there having been no systematic exploration of proper names, except on one occasion in the case of names of ships, those given can only be

\* Rusk, *Introduction to Experimental Education*, p. 74.



regarded as a portion, and not a large portion, of the whole. Several names of countries are to be found among the adjectives, since these were almost invariably given as adjectives descriptive of flags or ships.

Now to pass to the vocabularies themselves. That of J. is given first. All the words indicated by "2" were also used by D; all those indicated by "3" by H. Then follow the remaining words of D.'s vocabulary, and, finally, those still remaining of H.'s.

## VOCABULARY.

### *Nouns.*

Accident, aeroplane, air, airship, ammonia, anchor, animal (2), ant, apple (2, 3), apple-tart, apricot (2), apron, arm (2, 3), arm-chair, ash-bucket, ashes, auntie (2).

Baby (2), back, bacon (2), badger, bag (2, 3), bagpipes, bairn, baker, ball (2, 3), balloon, banana (2), band, bang (2, 3), bank, bar, barber, barge, barrel, barrow (2), basin (2), basket (2), basket-chair (2), bat, bath (2, 3), bathroom (2, 3), battleship, bay, bazaar, bear, (2, 3), beast, beauty, bed (2, 3), bedroom (2, 3), bee (2), beech-tree, beef, beehive, beetle (2, 3), bell (2, 3), belt (2), bend, berry (2), Bible, bicycle (2), "bike," bill, billy-goat (2, 3), bird (2, 3), bird's-foot, biscuit (2, 3), bit (2, 3), bite (2, 3), blackbird, blackboard, blade, blanket (2), blinds (2, 3), blood, blood-drop, blot, blotting-paper, blouse (2), blow (2, 3), bluebell, blue-Peter, boat, book (2, 3), book-case, boot (2, 3), bottle (2, 3), bottom (2), bounce, bow, bowl (2, 3), bowling-green, bowls, box (2), boy (2, 3), braces, branch, brass, bread (2, 3), breakfast (2, 3), breast, "breeks" (2), brick (2), bridge, brig, brightness, brother (2), brow (2, 3), brush (2), bubble, buckle, bud (2), buffalo, buffer, bugle, bull (2), bulldog, bullet, bumble-bee (2), bump (2, 3), bun, bunch (2), bunny (2, 3), burn, burn (stream), 'bus, butcher, butter (2, 3), buttercup (2), butter-dish, butterfly (2), button (2, 3), button-hole (2), buzz (2).

Cab (2), cabbage (2), cabin, cage (2), cake (2), calendar, calf, camel (2), camera, canal, canary, candle, candlestick, cannon, cap (2), captain, car (2), card, carpet (2, 3), carriage, carrot (2), cart, castle (2), castor-sugar, cat (2, 3), ceiling, chain (2), chair (2, 3), chalk (2, 3), "champings," cheek (2, 3), cheese (2), chemist, cherry, chest, chicken (2), chickweed, children, chimney, chimney-sweep, chimpanzee, chin (2, 3), china, chocolate (2, 3), chop (2, 3), chopper, Christmas, church (2), cigarette, cinders, clap, claws, clock (2), clothes, cloud, clover (2), club, coal (2, 3), coal-box, coat (2, 3), cock (2), cockatoo, cockle, cocoa, cod, coffee (2), collar (2), collection, college, colour, comb (2), combinations (2), "commoney," cook, cord, corduroy, cork (2), corn, corner (2), corn-stack, cot (2, 3), cough (2), cover, cow (2, 3), crab, crack, cracker (2), crane, crane (bird), cream (2), "creepie," cricket, cripple, cross, crow, crown, cruiser, crumb (2), crust (2), cry, cuff, cup (2, 3), cupboard (2), curds (2, 3), curls, currants (2), curtains (2, 3), cushion (2, 3), custard (2), cut.

Daddy (2, 3), daddy-longlegs, dairy, daisy (2), dance (2), dandelion (2, 3), day (2), dead-nettle, den (2), desk (2, 3), destroyer, diamond, dicky-bird (2), difference, dinner (2, 3), dirt, dish (2), diver, dock, docken, doctor (2), dodo, dog (2, 3), dolly (2, 3), donkey, door (2, 3), door-mat, drain, drawer, dreadnought, dredger, dress (2), dressing-table, drink (2, 3), drive, driver, drop (2), dry-dock, duck (2, 3), duckling, dust, dwarf.

Eagle, ear (2, 3), earth (2), earwig, edge, eel, egg (2, 3), egg-cup, elbow, electricity, elephant (2), emu, end (2), enemy, engine (2), ensign, envelope, express, eye (2, 3), eyebrow.

Face (2, 3), fall, farm, farmer, father (2), feather (2), feeder (2), fence, fender (2, 3), fern, fiddle, field (2), fig (2), fillet, finger (2, 3), fir, fir-cone, fire (2, 3), fireplace, fir-tree, fish (2, 3), fishing-net, fishing-rod, fishwife, flag (2, 3), flap, flash, fleet, floor (2), flour, flower (2, 3), flower-glass, fly (2, 3), fly-paper, fog, food, foot (2, 3), fork (2), fountain, fox, frame, frog (2), front, front-door (2), frost, fun, funnel (2), furniture.

Gallop, game, gangway, garden (2), gardener, gas, gas-stove, gate (2), geranium, giant (2, 3), gig, giraffe, girl (2), glass (2, 3), goat, God, golf, golf-course, goose, gooseberry, gorilla (3), gramophone, grandma (2), grape (2), grass (2, 3), greyhound, grinder, grizzly, ground (2), growl, guard, guinea-pig, gun (2), gunpowder.

Hair (2, 3), hairpin, half (3), halfpenny, hall-stand, hammer, hand (2, 3), hankerchief, handle (2), "hankie" (2), hare, hat (2, 3), hawkweed, hawthorn, hay (2), haystack, head (2, 3), heap (2), heat, heather, hedge, hedgehog, heel (2), height, helmet, help, hemlock, hen (2, 3), hide-and-seek, hill (2), hippopotamus, hive, hoe, holder, hole (2, 3), holidays, holly, home (2), honey (2), honey-bee, hook, hoop, horn (2), horse (2, 3), house (2), howl (2), humming-bird, hunter, hurry, hut, hutch, hyena.

Ice, ice-breaker, ink (2, 3), ink-bottle, iron (2), ivy (2).

Jackdaw, jaguar, jam (2), jar, jelly (2), jersey (2, 3), jug, juice (2, 3), jump.

Kangaroo, kennel, kettle (2), key (2), kick (2), kid (2), kind, king (2), kipper (2), kiss (2), kitchen (2), kite, kitten (2), knee (2, 3), knife (2), knob, knock (2), knot (2).

Laces, ladder, lady (2), lake, lamb (2), lamp, lamplighter, lamp-post (2), land, lane (2), lapwing, lark, laugh, lawn-mower (2), lead, leaf (2, 3), leather, leg (2, 3), lemon, length, leopard (2), letter (2), letter-box, lettuce (2), lid (2, 3), lifeboat, lift, light (2, 3), lighter, lighthouse, lightship, lily, lime, line, linoleum, lion (2, 3), lip (2), loaf (2), lobby (2), lobster, lock (2), log, lorry, lot (2, 3), lump (2), lynx.

Magnesia (2), magpie, mamma (2, 3), man (2, 3), mane, mangle, mantel-shelf, map (2, 3), marble (2), mark (2), marmalade (2, 3), mast (2), master, mastiff, mat (2), match (2, 3), matchbox (2, 3), mattress, matter, mavis, meadow-sweet, meaning, meat, mess, messages, middle (2), milk (2, 3), milkman (2, 3), milk-pail, mill, mine, miner, minute, mirror (2), mole, monkey (2), monkey's-puzzle, moon

(2, 3), "moppy" (2), morning (2, 3), moth, mother (2), motor (2), mountain, mouse (2, 3), mouth (2, 3), mud, music, mussel, mustard.

Nail (2, 3), name (2), napkin, napkin-ring, neck (2, 3), "neddy" (2), needle, nest, net, nettle, nigger, night (2), "nightie" (2, 3), nine-pins, noise (2), nose (2, 3), nursery (2), nut (2).

Oar, oatcake (2), oatmeal, oats, oil, omelette, onion (2), opal, orange (2, 3), orang-outang, organ, ostrich, oven, owl, ox.

Packet, paddle, page, pail (2), paint, painter, pane, pansy (2), paper (2, 3), parcel (2), park, parlour (2), parrot (2, 3), "parten," passenger, pat (2), path, pavement, paw (2), pea, peacock, pear, pearl, pen (2, 3), pencil (2, 3), penny (2, 3), people, pepper (2), pheasant, piano (2), picture (2), pie, piece (2), pier, pig (2, 3), pigeon, pile, pillow (2), pillow-cover, pin (2, 3), pip, pipe (2, 3), pistol, place, plank, plant (2), plasticine (2), plate (2, 3), plough, plug, plum, plump (2, 3), pocket (2, 3), point (2), poison, poke, poker (2), policeman (2), "police-house," "polly," pond, pony, poppy, porch, porcupine, porridge (2, 3), post, postcard (2), postman (2, 3), pot (2), potato (2), "pram" (2, 3), propeller, prune (2), pudding (2, 3), pump, puppy, purse (2), pussy (2, 3), puzzle.

Quack (2, 3), queen (2, 3), question, quilt (2).

Rabbit (2), race, railings, railway, rain (2, 3), raisin, rat (2), rattle (2), razor (2), reading (2), reason, redbreast, reel (2), rest, rhinoceros, ribbon (2), rice (2), ride, ring (2), river, road (2), robber, robin (2), rock, rocking-horse, roller, roof (2, 3), rook, room, root, rope, rose (2, 3), rose-leaf, rudder, rug (2, 3).

Safety-pin (2), sail, sailor (2), salt (2), sand (2), sandwich (2), Saturday, saucer (2, 3), scarf, school (2), schooner, scissors (2), scratch (2), screw (3), screw-driver, scullery, sea (2), seagull, seal, seat (2), seed (2), see-saw (2), serpent, servant, shadow, shamrock, shark, shaving-brush (2), shawl (2), sheep (2, 3), sheet, shelf (2), shell (2), shelter, shepherd, shepherd's-dog, ship (2, 3), shirt, shoe (2, 3), shoe-horn, shoemaker, shop (2), shore, shortbread, shot, shoulder, shovel, sickness, side (2, 3), sight, signal, sip (2), sister, skin (2), sky (2), slap, slate (2), slate-pencil, sledge, sleeve (2), slide, slipper (2, 3), smack (2), smell (2, 3), smoke (2, 3), snail (2), snap (2), sneeze (2), snib, "snip" (2), snow, soap (2), sock (2, 3), soda, sofa, soldier, sole, somersault, song (2), soup (2), spade (2), spark, spear, "specs" (2, 3), spectacles, speedwell, spider (2), splash, spoke, spoon (2, 3), spot (2), spout, spring, spy-glass, squirrel, stair (2, 3), stair-carpet, stair-rod, stalk (2), stamp (2), star (2), station, stay-band (2), steam, steamer (2, 3), step (2), stern, stick (2), sting, stocking (2, 3), stomach (2), stone (2, 3), stool, store, stork, story (2), strap, straw, street, string (2), stripe, stud, study (2, 3), stuff (2), submarine, sugar (2, 3), summer, summer-seat, sun, Sunday, supper (2, 3), swallow, swan (2), sweeper, "sweetie," swing, sword, syrup.

Table (2, 3), table-cloth (2, 3), table-spoon (2), tack, tail (2), tailor, tap, taper, tar, tassell, taste (2), tea (2), tea-cosy, teapot (2),



tears, teaspoon (2), teddy (2, 3), teeth (2), telegraph-pole, tennis, tent, tern, terrier, thief, thigh, thing (2, 3), thorn, thread (2), three-decker, throat, thrush, thumb (2), thunder, ticket (2), ticket-collector, tie (2), tie-clip, tiger (2, 3), tile, time (2), tin (2, 3), tinker, tip (2), tip-toes (2), toast, tobacco (2), toe (2), toffee (2), tomato (2), tongs (2), tongue (2, 3), tooth-brush (2), top (2), torpedo, tortoise, towel (2), town, toy (2), train (2, 3), "train-book," tramcar, trap, trawler, tray (2, 3), tree (2), trigger, trousers, truck, trumpet (2), trunk (box), trunk (elephant), truth, tub, tube, tug, tug-of-war, tunic, tunnel, turkey, turn, turnip (2), turret-steamer, turritella, turtle, tusk, "twister," typewriter (2).

Umbrella (2, 3), uncle (2), Union-Jack, university, use.

Van, varnish, vase, "veda" (2), veil, ventilator, vest, vulture.

Walk (2, 3), wall (2), walrus, war, wardrobe, warship, washstand, wasp (2), watch (2), water (2, 3), water-can, water-cart, wave, way (2, 3), weasel, web, weed, well, wet (2, 3), whack, whale, wheel (2), whins, whip, whipping (2), whisper, whistle (2), wild-cat, wind (2), windmill, window (2, 3), wing (2), "winkie" (2), winter, wire (2), wire-netting, "witchie" (2), wolf (2, 3), woman, wood (2), wool (2), word, work, worm (2), wringer, wrist.

Yacht, yard, yawn, year.

Zebra (2), Zoo (2, 3).

### *Proper Names.*

Abbeyhill, Belfast, Blackford, Bobbin, Bo-peep (2), Braid Hills (2), Brown Bess (2), Burntisland, Charlie, Coblenz (s), Colinton, Dapplegrey (2), Deutschland (s), Dorothy (2, 3), Edinburgh, Edinburgh Castle (s), Eildon (s), Ewan, Gallow Law, Georgie (2), Glasgow, Goldenacre, Harald (2, 3), Haymarket, "Hygiama" (2), Imperator (s), Inchkeith, Jim (2, 3), "Leerie" (2), Leith, Lomond Road, London, Lord Morton (s), Maggie (2, 3), Mauretania (s), Morningside, Mr. Scott, Nansen, Olympic (s), Playfair (s), Redgauntlet (s), Royal Scot (s), Santa Claus, St. Magnus (s), St. Margaret (s), St. Ninian (s), Silvertown (s), Stromness, Sunderland, Thor, Tinto, Titanic (s), Trinity, Tuckie, Vienna (s), William Muir (s).

### *Verbs.*

Answer, are (2), ask (2, 3).

Bake, bang (2, 3), bark, "bath" (2), bathe, behave, belong (2), bend, bid, bite (2, 3), blaze, bleed (2), blow (2, 3), boil, bounce, box, break (2, 3), bring (2, 3), brush (2), build (2), bump (2, 3), burn (2, 3), burst (2), button (2, 3), buy (2), buzz.

Call (2), can (2, 3), carry (2), catch (2, 3), caw, "champ," clap (2), clean, climb, close, collect, comb (2), come (2, 3), cook, cough (2), cover (2), crack, crawl (2, 3), crow, crush, cry (2, 3), cut (2, 3).

Dance (2), dangle, die, dig (2), dip, dirty, drive, do (2, 3), do (suit), drag, draw (2, 3), dress (2, 3), drink (2, 3), drip (2), drive, drop, dump.

Eat (2, 3).

Fasten, feed, fight, find (2, 3), finger, finish (2, 3), fire, fish, flap, fling, fly (2), frighten (2), "frizzle."

Gallop, gather (2), get (2, 3), get (become) (2), give (2, 3), go (2, 3), grind, grip, grow (2), growl, guess, gulp (2).

Halve, hammer, hang (2, 3), happen, have (2, 3), hear (2, 3), help (2), hide (2, 3), hit (2), hold (2), hop, hope, howl, hunt, hurt (2).

Is (2, 3).

Jump (2, 3).

Keep (2, 3), kick (2, 3), kill (2, 3), kiss (2, 3), kneel (2, 3), knock (2), know (2).

Laugh (2, 3), lead, learn, leave (2), let (2, 3), lick (2), lie (2, 3), lift (2), light (2, 3), like (2, 3), listen, live (2), load, lock (2), loiter, look (2), lose (2), love.

Make (2, 3), mark, mash, matter, may (2), mean, meet, mend (2, 3), milk, mind, miss, mix, move (2, 3), must (2).

Need (2).

Open (2, 3).

Paint, pat (2), peel, peep (2), pick (2), pierce, pin (2), plant, play (2), please (2, 3), plough, poke, post, pour (3), pretend (2), prick, pull (2, 3), push (2, 3), put (2, 3).

Quack.

Rain (2, 3), rake, rap, rattle, reach (2), read (2), remember, ride (2), ring (2, 3), roar, roll (2, 3), rub, run (2, 3).

Sail, sandwich (2), saw, say (2, 3), scrape (2), scratch (2), screw (3), see (2, 3), sell, send (2), set (2), sew, shake (2, 3), sharpen, shave (2, 3), shine, shoot (2), should, shout, shove, show (2), shut (2, 3), sing (2, 3), sink, sip (2), sit (2, 3), sleep (2, 3), slide, slip (2), smack (2, 3), smell (2, 3), smoke (2, 3), snib, sniff, snip, snow, sparkle, speak (2, 3), spill (2), spit (2), splash, spoil (2), spread, stand (2, 3), stay, step (2), stick, sting (2), stop (2), strike (2), suck, sup (2, 3), swallow, swim, swing.

Take (2, 3), tap, taste (2), tear (2, 3), tell (2), thank (2), think (2), throw (2), tickle, tie (2), touch (2, 3), tramp, trip, try, tumble (2, 3), turn (2), twist.

Unbutton (2), understand, undo, unlace, unlock (2), upset.

Varnish.

Wade, wag, waggle, wait (2), waken (2), walk (2, 3), want (2, 3), was (2), wash (2), watch (2, 3), wave (2), wear, weigh, whack, whip (2, 3), whisper, whistle, will (2), wind (2), wipe (2, 3), wish (2), wither, wonder, won't (2), write (2).

Yawn.

#### *Adjectives.*

A (2, 3), afraid, alive, all (2, 3), another (2, 3), any (2), awful.

Back, bad (2), baked, bare (2, 3), barley-malt, beautiful, bent, best, big (2, 3), black (2), bleeding, blind, blue (2, 3), brave, bright (2), broken (2, 3), brown (2).

Calm, China, Christmas, clean (2, 3), cold (2), coloured, cool, corduroy, cripple, cross.

Dead (2, 3), Denmark, different, dim, dirty (2, 3), done (2, 3), dusty, dry (2).

Eight (2, 3), eighteen, electric, eleven, empty (2), enough (2), every (2), express.

Fifteen, fine (2), five (2, 3), four (2, 3), fourteen, fresh (3), front, funny (2).

German, giddy, good (2, 3), goods, great, Greece, green (2, 3), grey.

Half, happy (2), hard (2), heavy (2), her (2, 3), high, his (2, 3), hot (2, 3).

Inside, iron, its (2).

Kind (2).

Lame, last (2), late, left, light, little (2), live, living (2), long (2), loose, lovely.

Many (2), mashed, more (2, 3), much, muddy, my (2).

Nasty (2, 3), new (2, 3), next (2), nice, nine (2, 3), nineteen, no (2, 3), noise, Norway.

Old (2), one (2, 3), open (2, 3), orange (colour) (2), other (2), our (2), own (2).

Past, pearl, pink (2), plenty, poisonous, Polar (2), poor (2, 3), precious, "pretend" (2), pretty (2, 3), prickly, purple.

Queer.

Ready (2), real (2), red (2, 3), red-roofed, right (2, 3), right (hand), ripe, rotten, rough, round (2), running.

Safe, sailor, same (2), sandy, seven (2, 3), seventeen, sharp (2), ship-building, short, shut (2, 3), sick, single, six (2, 3), sixteen, sleepy, smooth (2), soaking, soft, sore (2, 3), sour, steep, sticky (2), straight, strong, sunk, sure, Sweden, sweet (2).

Ten (2), that (2, 3), the (2, 3), their (2), thick (2), thin (2), thirsty, thirteen, this (2), those (2), thousand, three (2, 3), "tickly," tight (2), tiny (2, 3), tired, "tooty" (2), top, torn, tousy, true, twelve, twenty, two (2, 3).

Ugly.

Viking, violet.

Warm (2), wee (2, 3), wet (2, 3), what (2), which, white (2, 3), whole (2), wild, withered (2), wrecked, wrong (2).

Yellow (2), young, your (2).

Zoological.

#### *Pronouns.*

All, another (2, 3), anything (2), both (2), either (2), he (2, 3), her (2, 3), hers, him (2, 3), I (2), it (2, 3), me (2), mine (2), myself (2),



neither, nothing (2, 3), one (2, 3), others (2), she (2, 3), that (2, 3), their, them (2, 3), they (2), this (2), those, us (2), we (2), what (2), which, who (2), you (2, 3), yours (2), yourself.

#### *Adverbs.*

After (2, 3), again (2, 3), always, as, away (2, 3), back, backward, behind, down (2, 3), downstairs (2, 3), enough (2), ever, far (2), farther, fast (2, 3), forwards, here (2, 3), home (2), how (2), inside (2, 3), just (2), mannerly, nearly (2), never (2), not (2), now (2, 3), nowhere, off (2, 3), on (2), once (2), only (2), out (2, 3), outside (2), quick (2, 3), quite (2), round, safely, so (2), somewhere, soon (2, 3), straight, then (2), there (2), to-day, to-morrow, too (2, 3), twice, underneath, up (2, 3), upstairs (2, 3), very (2), well, when (2), where (2, 3), why (2), yet.

#### *Prepositions.*

About, after (2), against, at (2), behind, beside (2, 3), but, by (2), down, for (2), from (2, 3), in (2, 3), instead of, like (2), near, of (2, 3), off (2, 3), on (2, 3), over (2), round (2), since, through, till, to (2, 3), under, up (2, 3), with (2).

#### *Conjunctions and unclassified words and expressions.*

All right, and (2, 3), as, because, but (2), ding-ding, eh (2), else, fancy, gee-up, good morning (2, 3), good night (2, 3), hello (2, 3), if (2), "imphm," in case, maybe, no (2, 3), o'clock, oh (2), or (2), pitter-patter, ta-ta (2, 3), than (2), thank you (2, 3), though, too (2, 3), well (2), when (2), whenever, where (2), while, yes (2, 3).

#### *Words got from D. but not from J.*

Back-gate, bead, bonnet, bread-crumbs, "bubby," clasp, clicking, core, cousin, crop-comb, glass-stand, hand-bag, looking-glass, night-cap, petticoat (3), sand-shoes, trout, "tuppence."

Mary, Musselburgh. Clasp, iron, skip. Cracked, "lotter," silly, spotted, stiff. Ourselves, ownself.

#### *Words got from H. but from neither J. nor D.*

Brooch "by-bye," deer, hood, Jumbo, tick-tick. Count, crawl, get out. "Roaring."

We get therefore:—

Subject.	Age in months.	Total No. of Words and Expressions.
J.	54½	1712
D.	43	824
H.	28	345

(To be continued.)

## THE TEACHING OF COMPOSITION BY MEANS OF VISUALIZATION.

BY DOROTHY TUDOR OWEN.

IT seems to be universally recognized by psychologists that imagery, and especially visual imagery, plays a larger part in the thinking of children than of adults, and that such imagery is not merely an accessory but an integral part of their processes of thought directly determining its sequence. Where an adult thinks in words, a child frequently thinks in pictures. A recent article in the *Journal of Experimental Pedagogy* discussed the use which could be made of this tendency in the teaching of literature. The writer of this article has attempted to use it in connexion with the teaching of composition. If thinking in pictures is a natural, and thinking in words an acquired, process, it seems natural to approach the acquired process through the medium of that which is natural. To encourage children to represent their ideas pictorially is to "follow nature," to ignore the visualizing tendency is to ignore nature; to make the power of visualization a means to verbal thought and expression would appear to be the true mean, that of using nature and directing it.

Many researches have been directed to ascertaining the features in a scene, an object or a picture which children of various ages tend to notice and to mention in a description; the "categories" of observation, as Menmann calls them. Some experiments have been directed to the problem whether these "categories" can be changed by teaching, and Menmann is distinctly pessimistic as to the results. He admits that the subjects of the experiments have not been tested by a long and continuous training, but he appears to hold that, as far as could be ascertained from short courses of instruction, the nature of the thought was dependent almost entirely on the age of the pupil. Thus we are told that children at a certain stage in their development attend to form more than to colour, and to both more than to number. It may well be that instruction which merely attempts to give them headings under which they ought to think fails to produce lasting results, as most formal training which fails to attach itself to some existing interest is bound to do. The whole problem appears to the present writer to be one of interest; children have the physical capacity to perceive all the "categories," and, if a means can be devised of bringing them within the scope of some interest, any or all of them will attract the children's attention. This is precisely what is secured by the method of getting the visual image translated into an actual picture on paper, and effecting this by means of a verbal description given by one child to the rest of the class.

\* \* \* \* \*

It came to me once when I was giving a lesson to a class of children, whose average age was 12, how often the sound of words reminded us of scenes which were mirrored in our minds like little

pictures. There was a phrase I remember, "the palace under the sea," which made me ask them if it did not remind them of days in summer when they had been bathing and paddling. "Oh, yes," they answered, "when we were at such and such a place." Scenes were brought back to each one of them, and that they were vivid was shown by their eagerness to tell. Yet none of the children attempted to describe the scene. The intent of the word "bathing" or "paddling" was painted in a mass of yellow and blue in their minds—the colours were there, the yellow sand was seen deep underneath the blue water; but no words came naturally to describe the scene. I then thought that if children could only see their compositions as *pictures*, and the writing or telling as the painting of their picture for others to see, then they would learn to make the best use of words. I asked a child to come out in front of the class and describe anything she liked, while the rest of the class made a picture of what she told them. There was a protest from some that they could not draw, but that was the only time, and only once was it necessary to tell them that that did not matter. Their drawings were not to be finished works of art, but a test of whether the narrator could really express in words the scene which was in her mind. We discussed the plan together. Next time they were to bring coloured chalks, and in the meantime think of interesting things they had seen or events they had heard about. Each child who described was to have two or three minutes in which to do it, and while she described, the others rapidly sketched the impression on paper. At the end of the time given they were all to bring the papers up to my desk, while the one who had described the scene was to judge the pictures, criticize, and choose the best, which was to be hung up on the wall. They were then to go back to their desks, and were to be allowed to criticize the way the description had been given, after which I would summarize the good and bad points. The whole turn was to take within ten minutes, and then another child was to have her turn. About three accounts were to be given each lesson.

Next lesson this began, and once a week afterwards till the end of the term oral composition was taken on this method. Written compositions were done on another day, but the oral composition was by far the most popular. The actual drawing never took any but the secondary place—each child begged to be the one to give the description, and this part grew increasingly popular, although criticism became stricter as time went on.

The main rules of composition were learnt by this method more easily than by writing compositions. In the first place, the child found that her mistakes made the pictures dull when she knew that in her mind's eye the scene was bright and interesting. In the second place, she was criticized on the spot, not only from the teacher's desk but by those who could tell her, from practical experience, that her account was "muddling." Children of this age have a love of accuracy, and it was interesting to notice the way a pretty picture, with little detail,



would be discarded in favour of one which had representations of all the objects mentioned in the description. "Yes, that is pretty," one child said, "but it is not *like* what I was describing; it hasn't got in half the things—this one," pointing to a rather unprepossessing picture, "is really much better." Then the question would sometimes arise as to whether the lack of accuracy had not been on the other side. "Isn't this rather good?" said one, holding up an illustration. "No, I'm afraid not," said the describer; "you have put the stream across the middle instead of at the side." "But you never said it *was* at the side," was the answer; "you never said anything about its position." "Well, I meant to, because it *was* at the side. I remember quite well; don't you, Marjorie?" turning in desperation to her sister. "Well, we all weren't staying with you at the time," retorted the other, with a shout of triumphant laughter, and there seemed little more to be said. Judgment and criticism were given in the most good-tempered spirit, and they took pride in their impartiality. They soon learnt the order of proceedings, and at the word would go back quietly and quickly to their seats, and be ready to give their general criticisms if they had noticed anything good or bad.

These criticisms soon helped to correct the most obvious mistakes in composition. Looking upon her composition as a picture, the child found she must have one central object which could be given a decided position and not muddled up with other things which, though necessary, were only there to support the main point of interest. The arrangement of the various elements was the first thing of importance which they learnt. A first attempt was generally marked by a good deal of nervous excitement, the child being altogether taken up with her own feelings and the picture she was trying to find words to describe, while she did her best to forget the rest of the class. Fields, sea, trees, birds, would be breathlessly given, and assiduously sketched in by the other children; then at the very end, when each page was a mass of brilliant colours, they would be told of a beautiful castle or a house. To put this in would, of course, be impossible unless the whole picture was to be spoilt. This sort of statement was often made—"I told you there was a blazing sun, didn't I? Well, there was";—this, after the whole sky had been given some strong colour and no room left for the blazing sun. Criticism of this mistake was given by one child, who complained that "she suddenly afterwards tells of things," and this met with murmurs of approval from the class. Another child said that "there was nothing definite standing out." The next describer benefited by these criticisms by beginning, "the sea was a deep blue, and the sun was shining in the middle of the sky." Gradually they learnt to state their central point first or, if not, to leave a place in the middle for it, the result being that most of the children said how easy the picture had been to draw.

The arrangement was most important, but other mistakes were criticized as they made their appearance. For instance, accuracy was insisted upon at a very early stage. "I think," "sort of," "lots,"

"heaps," were too vague. "How can we draw a sort of hill?" they once said; and in a farmyard, what was meant by "heaps of hens, and pigs, and *things*?" The describer of the farmyard was more fond of giving the number than the description of things. She talked of "heaps of moors with streams, heaps of heather, and the streams had eels and things in them." The pictures produced from her first descriptions were not very clear! Such phrases and sentences as "see it all shining," and "there was a ship on the sea, and it flew up in the air, all white foam," were confusing when one came to try and give "it" definite form.

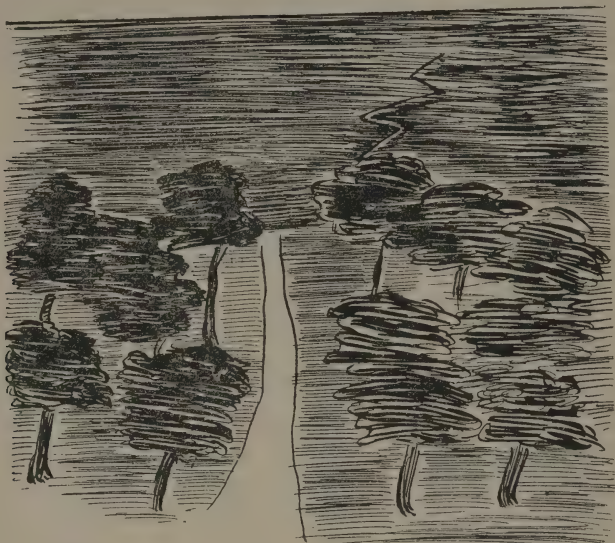
It was interesting to notice also how much it was taken for granted that the *name* of a thing gave its *intent*. A description was once given in which sea, banks, cornfields were all mentioned, with no description of each—the name alone conveyed enough picture, and no comment was made. When, however, one child, who had been to Switzerland, described a scene and talked of a glacier, many of the children had to stop drawing. "There was a glacier," said the child, in a reminiscent voice; then, becoming aware that this did not seem to have been accepted, "a green glacier." She kept repeating that there was a glacier, and could not understand why the picture came to an end as far as half the class was concerned. The best picture was only of snow-clad mountains under a deep blue sky. Later on they began to describe their pictures by giving attributes and painting them in colours. They found that by introducing colour more attractive pictures were produced, and also that main objects could be shown up by means of contrast. At first many of the criticisms were "she gave us no colours," and the drawings were dull and flat. Contrast was first given by means of colour, "a white cottage covered with red roses"; then later on by size, "tiny little cart against the sky."

They also learnt to use words which would give the idea of *mass*. "A pier stretched *far* out into the sea," and "a broad stretch of yellow sand." The picture illustrating this also showed an attempt at contrast in the description of a white cliff, seated on which was a blackbird with a white front, and was described by a child of eleven.

By degrees, too, they tried to choose those words whose sound gave "an echo to the sense," e.g., "*Twinkling* lights below" conveyed quickly and easily what it might take many less expressive words to paint. They probably found that in order to make the scene clear it was best not to use a great many words which merely caused repetition, and sometimes, in their shades of meaning, caused contradiction and confusion.

The illustration below was done near the end of the term, and was the result of one of the best descriptions given. "It was very black, the sky, and lightning flashed—stretching away was a long, white road, and on either side were black woods," &c. Of course it mattered little if the description were ever so fascinating or well arranged if the child could not be heard, and the chief fault at first was the indistinctness of

the words, which were often hurried and jumbled through excitement or nervousness. The children had to learn to speak clearly and pronounce their words distinctly if what they described was to be "seen" by the rest of the class."



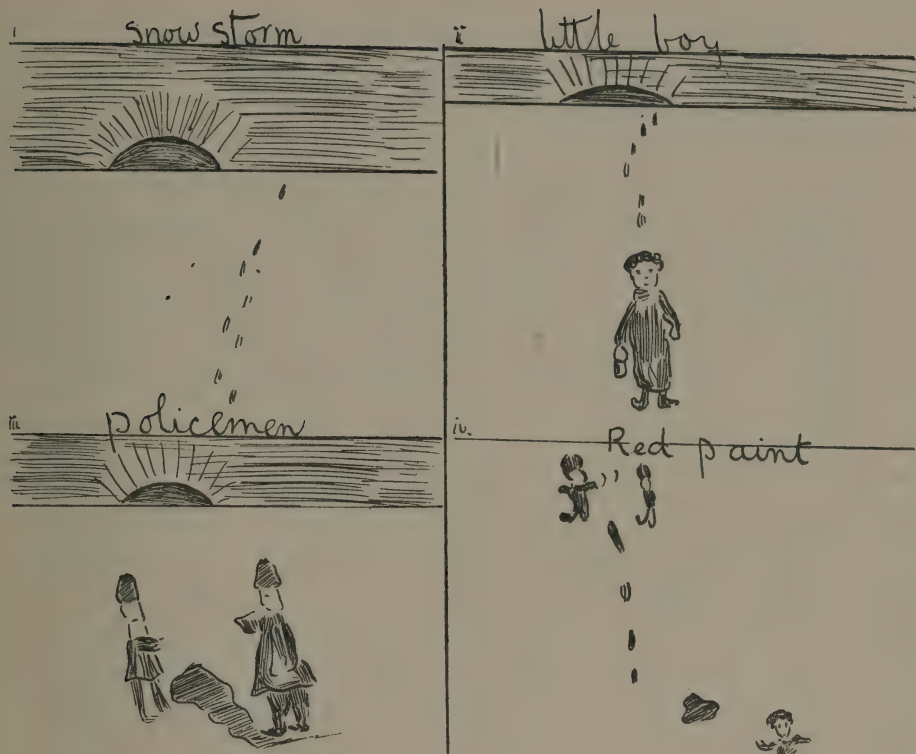
STRETCHING away was a long white road etc.

They also learnt how to make use of the tones of their voices. Different effects could be produced by speaking in a high, cheerful voice; one that was expectant, or one that was "gruesome."

The choice of subject was left entirely to each child, and was criticized afterwards. But so long as the account was a general one, producing only one picture, the description was nearly always of scenery. Later on, however, they were encouraged to describe incidents and events, and then it was soon found that unless the event took the form of a tableau, more than one picture was needed to give a clear representation.

It was in this way that they learnt, without knowing the name, the use of paragraphs. More preparation by the children was needed for this. Before they came to the lesson they had to prepare a story or description of some little adventure. The child who was called to give the description first gave the chief points in the story; told the class how often the scene changed and the hero occupied a fresh position or had a different setting. The children then divided their paper into the number of divisions needed, and wrote at the top of each the headings given them. Then the story began, and each space was filled up with the picture presented to them. Underneath will be seen illustrations of one of the stories; the adventures of a little boy who dropped red paint as he walked over the snow, and was chased by policemen as a murderer. This story was said to be a true one.





This oral composition was given once a week, and practice in written composition on another day. The children wrote descriptions of pictures in class, after first making their headings, under each of which they wrote a paragraph. The method used for the written composition was thus the inverse of that used for the oral. In the latter, the children drew what was described to them; in the former, they described what was pictured to them. Very soon I found they began to write fairly easily and clearly. The practice in oral composition taught them, on the one hand, the means by which they could make their descriptions vivid, and, on the other hand, by putting down their impressions on paper, they learnt to collect facts quickly and sort them in their own minds.

After I had found the method of teaching composition by means of visualization successful in Form II, I drew up a scheme by which the children in the Form below were to be prepared. The chief difficulty of the children who described and drew had been that of finding the central point and most important facts. I therefore began to give Form I, composed of children of average age 9-10, practice in doing this and in oral composition. They each had a book out of which they learnt their poetry, and first of all I discussed with them the way in which one is always waiting for something to come when listening to a story. What is it? They soon told me that "it is the most exciting

part." I then asked them to imagine that a story was represented by a figure like this,  $\Lambda$ , which I drew on the board. The point at the top was to represent the event without which the story would be nothing at all; the line leading up was to represent all the events which caused the chief event to happen, and the line leading down was to represent the results. Later on, a line drawn across the base represented the summary or conclusion. First I told them simple incidents, and made them stop me when I reached the "middle," e.g., *Lucy went for a ride on her bicycle, | she fell off | and had to spend six weeks on a sofa with a broken leg.* I then asked them to listen while I read aloud a piece of poetry, such as the Story of Gelert. They were to stop me when I came to the central point in the story. This they did, and the statement was written on the board, after which the events leading up and down from it were picked out and written down. After a short time, the children began to choose pieces of poetry for themselves. They picked out what they thought was the chief point and wrote it on paper, and the class discussed as many as there was time for with reference to each whole piece of poetry. They had learnt the pieces of poetry they had chosen, and said them in turn standing out before the class. They had to try to make clear in their recitations which was the chief point of interest, and work up to it. This they did by the expression of their voices. The first part was generally expectant, or else peacefully descriptive of the situation. The verse, or verses, which described the chief event was given either rather loudly or in a hushed whisper, and in either case was very clearly enunciated, while the conclusion was delivered in a tone of regret or triumph. I found that the children learnt a whole piece of poetry of about eight verses in one or two lessons, as the excitement lay in the expression with which they said the finished piece, and the clearness with which they made the rest of the class recognize the chief point of the poem. Criticism was given by the rest of the Form, "knowing it," "expression" and "distinctness" being the points on which each child was commented.

Later on, they began to have practice in telling the story of the poem, and they found this fairly easy when they had decided what events led up to the chief events and what led down, e.g.:—

- (1)
  - i. Description of the demon.
  - ii. How he meets the fairy.
  - iii. How he dies.
- (2)
  - i. The proud white rabbit.
  - ii. The fairy who tumbled into a hole.
  - iii. The grey rabbit.
- (3)
  - i. Description of the poor child.
  - ii. He finds a threepenny bit.
  - iii. What he bought.
- (4)
  - "Lord Ullin's daughter."
  - i. Daughter runs away to be married.
  - ii. Daughter drowned.
  - iii. Father's repentance.

Sometimes the children would write out their "speeches," but they nearly always spoke, using only their headings. These accounts were for the most part merely a string of facts with little description and some quotation; but they learnt to speak clearly, consecutively, and keep to a point.

In the Third Form, the methods used in the first two Forms were used to correlate composition with grammar. The children who came up to this Form knew their parts of speech and simple analysis and parsing. In learning the analysis of complex sentences they studied the character of the word, the phrase, and the sentence, and how to enlarge one into the other. The relation of the main sentence to various subordinate sentences was understood fairly easily by children who had been accustomed to finding main and subordinate facts. The complex sentence was to be looked upon as the outline of a picture, and sketched on the board, i.e., "When evening came (which in a picture might mean "when the sun was setting") the bird, which had a long black beak, flew over the garden." The central fact could then easily be seen, and the other subordinate sentences recognized as enlarging the verb and the subject. This sentence would then be analysed on paper, after which the picture would be filled in with representations of other subordinate sentences given by members of the class, e.g., over the garden "which sloped down to a river." Sometimes the analytic method was substituted for the synthetic. Instead of making up a picture out of different kinds of sentences, the children were asked to state the subject of one of the pictures on the wall, first in one simple sentence which would be enlarged by subordinate sentences. Whichever method was used, the point continually brought before the children was the *composition* of the picture and the similar grouping of descriptive sentences.

The relation between the sentence and the paragraph was also studied, and practice given in the writing of detailed accounts as well as of general outlines. Just as they had learnt, by the visualization of descriptions, that a new fact or different situation might need a different *picture*, so now they recognized that fresh aspects might be treated in different *paragraphs*.

Exercises in the writing of compositions were sometimes given in class. Subjects were suggested, and the class asked to write short compositions of two or three paragraphs under distinct headings, each paragraph being concerned with one main point. At the end the whole composition was sometimes condensed into one complex sentence, e.g., subject, "A Famous Battle" composition.

"The Battle of Waterloo."

- i. Two great enemies.
- ii. Description of the battle.
- iii. The result.

"Wellington and Napoleon, who were the greatest soldiers in Europe, met at Waterloo, where the fate of one was sealed."



Another exercise in which grammar and composition were correlated was the following. The class was asked to write down such words as:—

“Main fact”

How done?

When done?

A story or description of some historical event was then read to them in which they found the answers to their questions. A complex sentence was formed and analysed. For homework they wrote a composition on the subject. The headings were of course varied, e.g.:—

“Main fact”

Done by what kind of man?

Where?

For what reason?

In this way the children learnt elementary précis writing, and were given practice in listening to general accounts and recording main facts at the same time.

In the next Form the chief attention was given to the study of style, and composition was correlated with literature as well as with grammar. Sentences were chosen from poems they knew and analysed, e.g.:—

“The shadow of the dome of pleasure  
Floated midway on the waves,  
Where was heard the mingled measure  
From the fountain and the caves.”

This was then visualized so that the scene should be made as vivid as possible. The composition was discussed, and a plan sketched. Words were then considered—the type and the sound; those being chosen which would give the right colour and be suitable for such a subject. Finally, a description was written in two paragraphs.

Sometimes a complex sentence was given by a member of the class, e.g., “As the man emerged from the gloom of the forest into the open he saw a pack of wolves, which was approaching rapidly over the snow.” This sentence was divided into its three parts—the main statement and two subordinate clauses, each of which formed the heading for a separate paragraph. The scene was then visualized in a sketch on the board, and the character of the subject discussed. Words to express the darkness and rustling of the wood, the terror of the situation, were suggested by the class, and the contrast between the darkness of the wood and the white expanse of snow were all to be represented by suitable words. A rough sketch of this having been drawn up, another sentence would be discussed for composition. “Lightly my little skiff danced over the waters towards the fishing village where I had my home,” would be analysed and discussed in the same way. For homework any one of these compositions would be written. The subjects were often suggested from the book the class was studying in literature, which again was constantly referred to for different types of words.

Practice in précis writing and note-taking was also given in this Form.

Throughout the Course, from the First to the Fourth Form, visualization was used as a means of portraying accurately and vividly the thoughts and ideas in the mind. Some children visualized less easily than others, but in the majority of cases the method produced greater ease in writing, greater freedom, a larger vocabulary, more freshness and sincerity of feeling than I had ever got before.

## THE STUDY OF EDUCATION IN RUSSIA. I.

BY PROF. ALEXANDER NETSCHAJEFF, PH.D.

SCHOOL affairs in Russia have no administrative centre. The different ministries amongst which the Russian Government was divided, more than 100 years ago, had each their own educational institutions. The distribution of educational institutions amongst the several ministries, owing to a whole series of complicated historical conditions, has not followed any strict logical plan. Technical institutions are under the supervision of the Ministry of Commerce and Industry, but the Technological Institute of Petrograd is under the control of the Ministry of Education; instruction in agriculture and rural economy is divided independently between the Ministries of Agriculture and of Public Institutions. The medical faculties of the University and of the Women's Medical Institute are under the Ministry of Public Instruction, but the Imperial Medical Academy, in which, up to the present time, our most distinguished *savants* have been trained, is under the Ministry of War. The Imperial Alexander Lyceum, which is the great training school for our diplomatists and high officers of state, is attached to the Ministry for Charitable Endowments; one section of our public elementary schools is directed by the Ministry for Public Instruction and the other by the authorities of the Orthodox Church.

The programmes of educational institutions under the several ministries differ very much from each other, and on this account the transference of a pupil from a school of one type to that of another is very difficult. This is especially the case as regards passing from an elementary school to a *gymnasium* or a *realschule*. This fact, combined with the very early specialization of our education, leads many Russian educationists and social workers nowadays to advocate a single type of school for all children as a necessary preliminary to subsequent specialized education.

But, it is necessary to remark that the dispersion of Russian educational activities amongst different ministries has also its advantageous side. Owing to the great power which an automatic régime gives to the personnel of the different ministries, harsh and unexpected changes have often been introduced into the domain of the schools. Periods of promise and hope alternate with periods of stagnation so intense that every unofficial suggestion of pedagogical advance is suspect. Happily for Russian schools, the action of the different ministries in regard to pedagogical problems has been anything but uniform. What is forbidden in the schools of one ministry is permitted in the schools of another, and what one minister has pronounced inopportune, another considers essential. On this account, reformers have been successful in gradually introducing their ideas into one ministry or another. In this regard, one ought especially to mention the enormous influence upon Russian schools in recent times

which has been exerted by the Ministry of Trade and Commerce. This Ministry gave civic organizations which were willing to open a commercial school a real voice in the general work of the school, granting freedom to the pedagogical initiative of the teaching staff and co-operating with them in bringing parents and schools into closer union. During the last 25 years it has covered Russia with a whole network of new schools supported entirely by civic and by private funds. And many of the reforms accomplished in recent years in the schools of the Ministry of Education are only an echo of those previously accepted in the commercial schools.

So far as concerns the working out of educational problems from a scientific or a methodological point of view, leaving out of considerations more remote times, one may mention the extension of the ideas of Comenius & Locke throughout Russia during the second half of the eighteenth century. Under the influence of these ideas, Catherine II undertook a series of important scholastic reforms. The foundation of the Universities (amongst which Moscow was the first to be established, in the year 1755) brought the hope that they would become centres of research into pedagogical problems, the more so as the middle and lower schools were at first put under the direction of University Professors. But very soon after the creation of a "Ministry for the Enlightenment of the People,"\* the Universities were deprived of all direct influence in school affairs, and at the head of the administration of educational districts men appeared who, in point of fact, had nothing whatever in common with pedagogical science. There were no chairs of Education in the Universities. Scientific bodies thought research into the problems of pedagogy lay outside the sphere of their activities. Thus, the Russian schools, in organizing themselves, at the best did nothing more than follow slavishly in the footsteps of their Western neighbours. But during the sixties of last century—the period of the great reforms of Alexander II—a demand for the independent study of educational problems was raised. At that time a book by Ushinsky appeared, entitled "Man as the object of Education."

The fundamental idea of Ushinsky was that if we desire to educate man in his every aspect we must study him in the same way. For this reason he demanded for teachers a thorough anthropological training, and recognizing that many of the sciences necessary to teachers for the thorough understanding of educational problems are only in their beginnings, he dreamed of the foundation of faculties of Pedagogy in the Russian Universities. Especially did Ushinsky insist on the serious study of pedagogical psychology. His book was, among other things, a systematic exposition of psychology. The influence of Ushinsky on Russian pedagogical literature was very significant. His demand for the investigation of the mental life of children was in intimate correspondence with the social tendencies of the period of the reforms of the Czar-Deliverer. It was supported by the inspired

\* The literal translation of the official title of what we call "The Board of Education."



pamphlets of another famous Russian pedagogue and physician, Pyrogof, who called for the education of the personality of the pupil through the agency of the personality of the teacher.

But the period of reaction which began in the sixties and completely dominated the reign of Alexander III thrust aside the ideals of Ushinsky and the tendency (indissolubly connected therewith) to put research into the problems of education upon a psychological basis. In official circles at this time other pedagogical ideals were favoured. The Ministry of Public Instruction established over Russia the system of so called classical training, in accordance with which the real needs of the pupils' minds were completely ignored. No regard was paid to the individual claims of the children. The aims of the secondary schools were avowedly purely formal. The whole organization of the gymnasia down to the minutest details was modelled on a single external pattern, the spirit of pedagogical creation was crushed, and the personality of the teacher was humbled. In this way the Ministry of Public Instruction hoped to provide the state with agreeable and obedient servants.

This school regime, after irritating the people more and more, finally became a fiasco. Towards the end of the nineties, the Minister of Public Instruction himself openly testified to the need of radical reforms in the secondary schools. Notwithstanding the severe censorship existing in Russia at that time, numerous pamphlets and books on pedagogical problems were allowed to pass freely. Amongst the successive events which were changing the general structure of Russian society, the question of education was once more brought into the front rank. A period of numerous pedagogical conferences began. Various projects of school reform were in the air, and there were innumerable efforts towards new methods of instruction in the different school subjects, and towards the organization of schools of a new type. This restless activity is still going on.

Certainly it is difficult for one who is in the centre of this pedagogical movement to estimate its significance with sufficient fullness and detachment. For this reason I shall try to characterize the currents of Russian pedagogical thought only so far as they touch my own special work—experimental pedagogy. As a protest against the oppressive formation of the old school, which took no count of the interests of the personality of the pupils, and which in opposition to pedagogical theory wished to give definite political or confessional colour to the schools, the catchword "free education" began to be loudly acclaimed, after the manner of Tolstoi who in his pamphlets demanded respect for the personality of the child. Tolstoi's present successors, carried away by the logic of their polemic, sometimes arrive at the extreme conclusion that the teacher must not even form his own plan of education and must only submissively follow such indications as the children shall from time to time furnish.

The message of "freedom in education" finds also sympathetic support (under important limitations) from a section of teachers who take their stand on psychological principles. We must remember, they say, that self knowledge is not an easy position to reach, and it is the child's right to have a teacher who knows his (the child's) mind not merely as well as the child knows it, but actually better. The teacher should know not only the present psychical condition of his pupil, but he should also know it in relation to the whole biological development of the child.

Under these influences the interest of Russian school folk in psychological questions was freshly and strongly awakened. It is true, however, that after the work of Ushinsky, the father of Russian pedagogical psychology, this interest never completely died out, stimulated as it was from time to time by the writings of learned men who upheld the necessity for Russia of an independent study of educational questions, assisted by diligent research into the peculiarities of child nature. Professor Lesgaft, a distinguished Professor of Anatomy and author of a work on "School Types," and Professor Kapterev, founder of the School of Biology in Petrograd, and author of a book on "Pedagogical Psychology," may be singled out from a large number of medical men who have done much for education by their investigations into school anthropology and hygiene.

*(To be continued.)*

## AN EXPERIMENT IN VERSE COMPOSITION IN THE ELEMENTARY SCHOOL.

By M. MARGARET GOUGH, The Training College, Dudley.

I HAVE just concluded what proved to me a most interesting and, I may say, encouraging course of eight demonstration lessons, in which I used the songs of Shakespeare as a basis for poetry and composition teaching to Standard V. In the third lesson of the series the children answered a letter which they had received from Ariel (I am indebted to Mr. Caldwell Cook, Perse Playbook IV, for this idea), in which he asked them to suggest a place in Dudley where fairies might hold their revels. The majority of the class suggested Dudley Castle Grounds, and in the next composition lesson (lesson 5 of the series) the children impersonated fairies and held the revels. After this, in lesson 7, Ariel wrote to the class saying that he would be very glad to have a special song written for the next occasion, and the children thereupon set to work to write one. (I describe at this length what led up to the children's attempts at writing poetry, to show that they had had no previous "drill" in metre, though, of course, their attention had been called to it in the poetry lessons. As a matter of fact, as I have mentioned before, the lessons were demonstration lessons, and, perhaps, as my

chief aim was to show the students, in a short course, as many possible ways of teaching poetry as I could, I dwelt on metre rather less than more than I usually should, and than, I think, the occasion demands.)

To come to the actual lesson. The reading of Ariel's letter and a little discussion which followed occupied about ten minutes. In the twenty minutes which remained the children wrote their songs. Of the sixty-odd children in the class only one or two made at first no attempt whatever, and even these, on being asked to write down at any rate what they thought fairies might sing about, all wrote something. I give the worst:

"Come sing me to sleep dear fairies,

The night fall is coming very quickly you (k)now";

and another:

"Sweetly the birds sing in the trees,

Flying from branch to branch pecking off seeds,

Dropping them as they fly."

Certainly neither of these seems an excessive amount, even of one's first poem, to write in twenty minutes!\*

Metre was, of course, the chief difficulty, and here Shakespeare's songs, with their comparatively difficult metres, afforded very little help. Much of the "poetry" then is bad, or, shall we say, Whitmanesque, in this respect.

For example:

"Come, come, come

The trees are gaily waving

Beckoning you with outstretched arms of evergreens.

Come help find young cowslips and roses

Sweet young flowers to crown our May Day Queen";

again:

"Awake, awake, the sun has arisen

And there's shining dew on every buttercup";

and:

"Come, come and sing

The hedgehog is asleep

So is the worm

And busy bee asleep."

Rhyme, too, presents many difficulties to the limited vocabulary of Standard V. There were, however, many strenuous efforts made. The following, for example:

"Come and dance in merry maze

Round the fairy horses as they graze";

and:

"Sit by the lake and see the water lilies.

Take a seat in a buttercup, fair and fat

Do not care for those who are sill(i)es

St(r)oke the sweet flies that sit on your lap."

\*In my quotations I have copied exactly what the author wrote except where it is obvious that a letter has been omitted in spelling, when I have put the omitted letter in brackets, thus: "bea(uty)."



Naturally, the war looms large even in fairy songs. According to one writer fairies are somewhat callous :

“ We hear a cry from the sick  
But we go on with our dance again ”

Here is another—one of the worst in all respects :

“ MARCHING TO THE FRONT.”

“ March on, march on, ye brave warriors  
The sun is setting down in the East  
Be not afraid but march on  
The stars are shining brightly  
And the moon is looking down upon us  
March on march on, the owls are owling.”

There were many words and phrases borrowed from the Shakespeare songs, and, of course, a great many hackneyed and commonplace phrases and ideas : “ We trip as light as a feather,” “ the world of nod,” “ the shady chesnut tree,” “ the wild waves moan,” “ the wind is howling wild.” But there were also, I think, as some of the extracts already given show, words and expressions which show real imagination, and the appeal to the writer of beauty or strangeness in ideas or words. I give a few more :

“ While the moon is shining bright  
And making beautiful the starry night.”

“ Singing in the twilight  
Dancing in the moonlight  
Laughing in the su(n)shine  
Prancing in the nighttime.”

“ As soft as the golden hay.”

“ Among the trees in Autumn fair  
that form a carpet everywhere.”

“ Fairies dance to and fro  
Like a moonbeam dancing low.”

“ From the buttercups-heads they meet ”

“ To hear the parrot sing and talk.”

These qualities were shown, too, in some of the titles : “ How sweet is the Summer,” “ The gay fairy song,” “ The fairies’ night song,” “ Under the sun,” “ Fairies meet,” “ When Winter has gone,” “ The field of gayness.”

I next give entire the song which I considered on the whole the best, though there were some others that had touches of greater originality and freshness. The second line in stanza two read originally. “ As it chases the clouds of morn,” and when the author showed it to me I said : “ Isn’t there something a little wrong there ? Does the beat fall in the

right place all through? How do you think you could alter it?" She replied at once: "Oh yes! 'Doth chase' would be better." Further, she wrote the last stanza in the last minute or two of the lesson, after a general exhortation to the class from me that they should all go on either improving or adding to their work. I have no doubt that she could have improved this stanza also.

"Come and dance upon the green  
Whith our lovely fairy queen,  
She is fairer than the day  
Or the flowers that ope in May.

CHORUS. Oh come and dance upon the green  
Whith our lovely fairy queen,  
Fairer, fairer than the day  
Or the flowers that ope in May.

Her step is lighter than the fawn  
As it doth chase the clouds of morn  
Her smile is brighter than the waves  
That hide in pearl and coral caves. CHORUS.

No fairer maiden you would see  
In fairy caves on land or sea,  
For bea(u)ty, goodness, fun and spree  
Our fairy queen doth hold the key. CHORUS.

Her voice is sweeter than the lark  
As it soars on high hark, hark, hark,  
Her hair is prettier than the sun  
Now I think the moonlight's done." CHORUS.

For the reader who has reached the end of this account without seeing any reason for the encouragement which I claim to have received, I will add three facts. First: the children appeared to enjoy writing their songs, and Standard V does not simulate enjoyment. One of the suggestions given me for the next lesson was: "Let us set our songs to music." Secondly: at the next lesson I had two original poems brought me by a child who had written them in her spare time. Thirdly: Dudley is in the Black Country.

## THE INSTITUTE OF CHILD-PSYCHOLOGY AND NEUROLOGY IN MOSCOW.

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DR. ROSSOLLIMO was one of those members of the staff of the University of Moscow who felt obliged some time ago to resign their appointments on account of the position the police took up in relation to questions of University discipline. He had served the University for twenty years. A distinguished alienist and a lover of children, he had already founded an asylum for idiot, imbecile and mentally defective children in Moscow, and for a long time he had taken an active part in the pedagogical courses (Pedagogical Academy) privately organized for the higher professional and academic education of teachers, which are a conspicuous feature in the educational activities of both the Russian capitals. After his resignation from the University, Dr. Rossollimo added still further to his public benefactions by founding and equipping the Institute of Child-Psychology with which we are now concerned. It is at present housed in what was previously a private dwelling, in the near neighbourhood of the Pedagogical Academy, to which it serves as a valuable adjunct.

The aim of the Institute is the study of the functions of the normal and of the pathological nervous systems of children. Scientific and practical demonstrations are given to pedagogical students, children are examined for school purposes, and medical advice is given to children suffering from nerve or heart trouble.

To carry out its programme, the establishment is provided with a psychological, anatomical and physiological laboratory, a museum of anatomy and psychology, a room for clinical examinations, a library and a reading room. For purposes of research, it has at its disposal a public elementary school of three classes, providing, that is to say, a three-year course (the norm at present in Russia), a kindergarten, a residential school for mental deficients of all grades, and an asylum for children suffering from incurable disease.

Instruction is given by the founder, who is, of course, Professor of Pathological Pedagogy in the Academy, and a number of voluntary helpers, who are mainly psychiatrists; but teachers who are interested in pedagogical psychology also give assistance. The laboratories are small but admirably fitted up, especially for psychological investigations. In addition to the usual array of kymographs, chronoscopes and the like, the collection of practical tests for various degrees of mental deficiency is a noteworthy feature of this interesting example of the combination of scientific zeal and public spirit which a traveller finds everywhere in Russia.

J.A.G.



# THE EVIDENCE OF MENTAL FATIGUE DURING SCHOOL-HOURS.

By GLADYS W. MARTYN.

ON the results of a series of experiments which were published in this Journal, March, 1911, it was concluded that the school day did not cause any regular decrease in the cutaneous spatial threshold of the children, in their muscular capacity, in the speed and quality of their mental work, or in the quickness and accuracy of their perception. The validity of the conclusion was tested by comparing the difference of the mean results of series taken respectively at 10 a.m., 12 noon, and 4 p.m., with the probable error of the difference of the means. The formula used, however, did not allow for the correlation between the series. Mr. Winch called my attention to this, and re-calculations have been made, using the probable error for the difference between the means of two correlated series, as follows:—

$$P.E. = .67,449 \sqrt{\frac{\sigma_1^2 + \sigma_2^2 - 2r\sigma_1\sigma_2}{n}}$$

With regard to the cutaneous spatial threshold there is found a significant fall between 10 a.m. and 4 p.m., and again between 12 noon and 4 p.m.

## CUTANEOUS SPATIAL THRESHOLD.

Total number of Experimental Days—78.

Difference between means.	Probable error of difference.
10 a.m. and 12 noon = .00 (threshold the same).....	.016
12 noon and 4 p.m. = .04 (a fall in the threshold).....	.012
10 a.m. and 4 p.m. = .04 (a fall in the threshold).....	.006

The spatial threshold showed a tendency to improve during the day.

The muscular grip, which was tested by the dynamometer, also showed a significant improvement during the day between 10 a.m. and 4 p.m.

## MUSCULAR GRIP.

Total number of Experimental Days—114.

Difference between means.	Probable error of difference.
10 a.m. and 12 noon = .1 (a rise).....	.144
12 noon and 4 p.m. = .2 (a rise).....	.154
10 a.m. and 4 p.m. = .3 (a rise).....	.059

This improvement Mr. Winch regards as a result of the long rest from neuro-muscular work. In the speed and quality of fifteen minutes arithmetical work a significant rise occurred from 10 a.m. to 12 noon, followed by a fall at 4 p.m. Little difference was found between the work at 10 a.m. and 4 p.m. A similar result was seen in the accuracy and quickness of perception measured by the number of chequers copied from a given pattern in five minutes.

## ARITHMETICAL WORK.

Total number of Experimental Days—218.

Difference between means.	Probable error of difference.
10 a.m. and 12 noon = 12 (a rise).....	1.8
12 noon and 4 p.m. = 16.5 (a fall).....	2.0
10 a.m. and 4 p.m. = 4.5 (a fall).....	2.8

## CHEQUER BOOK.

Total number of Experimental Days—76.

Difference between means.	Probable error of difference.
10 a.m. and 12 noon = 15 (a rise).....	2.8
12 noon and 4 p.m. = 16 (a fall).....	4.0
10 a.m. and 4 p.m. = 1 (a fall).....	3.4

The rise Mr. Winch regards as a phenomena of mental adaptation; the fall as an effect of fatigue.\* These results are in agreement with those previously found by Mr. Winch, who has shown that tested mentally children improve during the morning and fall off a little towards the end of the afternoon session.

My sincere thanks are due to Mr. Winch for the trouble he has taken in connexion with the above results.

\*See specially:—

Mental Fatigue in Day School Children. *British Journal of Psychology*, December, 1911.

Mental Fatigue in Day School Children. *Journal of Educational Psychology*, January and February, 1912.

Mental Adaptation during the School Day. *Journal of Educational Psychology*, January and February, 1913.

## REVIEWS AND NOTICES OF BOOKS.

**History of Elementary Education in England and Wales from 1800 to the Present Day.** By C. Birchenough, M.A. (pp. vii+394.) W. B. Clive. 4/6. Hitherto, students desiring a general knowledge of the development of elementary schools in England since the beginning of the nineteenth century have found themselves hampered by the absence of any short and satisfactory survey of the subject as a whole. There are books dealing with the development in some one or other of its aspects, as, for example, those which sketch the legal and administrative evolution of the present system. Taken together these books leave important topics untouched or inadequately handled; perhaps the most marked defect lies in the comparative neglect of what may be termed the internal economy of the school. The way was clear for a history more comprehensive in scope than others which have appeared, and yet not too full to be serviceable alike for the student of education and for the general reader. Such a history Mr. Birchenough supplies in the work before us.

His aim, as set forth in the preface, is "to present a concise and accurate account of the evolution of the system of elementary schooling in England and Wales as we know it to-day," such as will meet "the requirements of, for instance, the Syllabus of the Board of Education for teachers in training." Its use for a purpose of this kind can be cordially recommended. At the same time, it is not simply a text-book. The author shows throughout that he has read widely and with discernment, and it is evident that his material has been gathered with patient labour from original sources. He has given independent consideration to what is familiar, has brought to light much that is new, and may be congratulated on having made a most useful contribution to the history of schooling in this country.

Every student of the period knows how difficult it is to organize satisfactorily the varied and complex movements it comprises so as to prevent a confused impression of the whole. Mr. Birchenough has met this difficulty by dividing his book into three parts, each of which, while closely related to the other two, permits of continuity of treatment in itself. Thus, Part I traces the steps by which the State has come gradually to make itself responsible for the elementary schooling of its citizens, and in this connexion the nature and extent of the control of schools by outside authorities during this period are made clear. Part II is concerned with the changes internal to the school in the matter of curriculum and organization. Part III brings into one view the slow advance of the teacher in status and in training.

Part I opens with an admirable statement of the condition of elementary schools during the eighteenth century. Charity Schools and Sunday Schools, both the joint offspring of religion and philanthropy, exhausted between them the effective provision for the education of the poor. If in the realm of practice voluntary enterprise stood alone, in the realm of speculation the necessity of State intervention was already being canvassed, and the views of influential thinkers such as Adam Smith, Thomas Paine, William Godwin, and Malthus, are given with clearness and brevity. These not only reveal a divergence of opinion among themselves, but are also in direct opposition to the immemorial duty and prerogative of the Church in caring for education. It is the progress of this controversy in thought and action, accentuated as it was by rapidly-changing industrial and political conditions and by the apparent failure of voluntary effort, in spite of unremitting toil and sacrifice, to cover the country with good schools, that the author goes on to describe. He is seen at his best in the careful summaries he gives of the main positions of contending parties, and his selection of writers who helped to mould public opinion is at once catholic and impartial. The Benthamites, Robert Owen, Lovett, Carlyle, Dickens, and Ruskin are passed in review, each in his proper place. If less than justice is done perhaps to the religious conception of education, except in one long quotation from Maurice, ample tribute is paid to the practical activities of the Church and other religious communities. The National Society and the British and Foreign School Society are assigned the prominence which is their due. The constant fire of criticism and the directions in which reforms were sought are made

evident to the reader in what is said of the associations formed to press particular solutions of the problem or to defend positions assailed, of the abortive attempts of Parliament to effect a compromise, and of the enquiries of Royal Commissions or Parliamentary Committees; at the same time, the action of the State, whether by administration or legislation, from tentative beginnings, through a period of supervision to the acceptance of a partial responsibility in the establishment of School Boards by the Act of 1870, and so on to the assumption of full control in 1902, is effectively sketched. The multiplicity of topics is great, but Mr. Birchenough cuts a straight path for the student through a bewildering maze of detail.

The second part, which is nearly equal in length to the first, is full of interest, especially in the earlier chapters. Well chosen extracts from contemporary school readers reveal a severely religious aim permeating every branch of the instruction given in the Charity Schools. If aridity and want of understanding of child-life are here only too manifest, the dawn of a better day is seen in the Children's Books of Mrs. Barbauld and the Edgeworths, where good sense and genuine sympathy are combined in an effort to make knowledge more pleasing. Since these books in their turn are regarded by a later age with an amused tolerance, it is well to be reminded, as we are reminded in an excellent analysis of the educational teaching of the Edgeworths, that they are the product of "a body of educational thought and practice that was far from contemptible." Meanwhile, the monitorial schools were coming to the front, and the interest shifts to the machinery of instruction. A vast amount of ingenuity was spent on organization to secure that a large number might be taught under the control of a single master. No detail was too small to escape regulation. Procedure in teaching was simplified to such an extent that a quite young monitor could be trusted to conduct a lesson with confidence and ease. There was, of course, a general supervision, and the whole method equally as it concerned the monitor and the master was facilitated by the plan upon which the schoolroom was arranged. In this connexion the author has supplemented the explanations given in the text by a series of illustrations. Here may be seen the calculated order of the schools of Bell and Lancaster, of the later Tripartite system, of Wilderspin's Infant School, all in striking contrast to the crowded disorder of John Pounds' school; none the less the sympathies of the reader remain with the honest cobbler and his gracefully negligent scholars. The era of rigid mechanism was short-lived, at any rate in its early form. Wilderspin and Stow, no mean organizers themselves, emphasize each in his own way the living nature of instruction, even if in practice neither escaped entirely the toils of the mechanical traditions of his day. This movement towards a broader conception of the function of the school received a powerful impulse from men and women inspired by Fellenberg and Pestalozzi, and it is not surprising to find that in some few schools manual work shared with books a portion, if only a small portion, of the school day. The time, however, for an extensive reform in this direction had not yet come. Had Kay-Shuttleworth continued to direct the policy of the central authority, his energy and foresight might have hastened on the change. Ill-health compelled him to resign, and in course of time the Education Department fell into the hands of Robert Lowe. So when it came about that the State exercised for the first time direct control over the curriculum, it was he who determined its form, and it is with his name that the "Revised Code" of 1862 will be for ever associated. Its main principle is condensed in the historic phrase, "Payment by Results." From this Code onwards for nearly thirty years the curriculum of the elementary school has no history, or rather none worth relating, unless it be to point a moral or adorn a tale. Happily, Mr. Birchenough lives at a time when he can conclude this section of his work with a chapter on "The New Spirit in Education." What that is, who have been its sponsors, how it is asserting itself to-day, may be left to be gathered from the pages of the book itself.

Of Part III, it will be enough to say that the chapter on the Teacher, in which it consists, is at once succinct and satisfactory. It is a gain to have this important topic dealt with separately.



To sum up. It has not been the author's purpose to write a critical history of the period, and, except for an occasional comment or reflection, he leaves the narrative of opinions and events to tell its own tale. It is clear that he regards the greater share of the State in elementary education as a desirable result of the growth of democratic principles. But he describes calmly, clearly, and without prejudice, the controversies which were waged once with so much heat and passion. Some, perhaps, would have preferred to see less space given to proposals which turned out to be impracticable, or to details of regulations of only passing interest; but had these been omitted others would as assuredly have complained of incompleteness. For our part we think that he has performed the difficult task of selection with success, and has preserved on the whole a just proportion in the distribution of the space at his disposal between the topics which necessarily come up for consideration in a comprehensive treatment of the subject. It only remains to commend to all interested in the origin of the system of elementary schools in this country what is, in the writer's judgment, a sound and careful piece of work, and to express the hope that it will stimulate the study of the history of Elementary Education in our Training Colleges now that such study is encouraged by inclusion in the syllabus of the Board of Education.

A. J. MONAHAN.

**What do we mean by Education?** By J. Welton, D.Lit., M.A. Macmillan and Co. Price 5/- net.

ENGLISH Education owes Professor Welton a great debt of gratitude, for there are few men in England who have laboured as unceasingly and as effectively in raising the study of education from mere empiricism to a higher philosophical and a more scientific plane. His various educational writings have become standard works, and deservedly so, since they show a high idealism, deep philosophical comprehension, clear logical analysis, and a fund of rich experience. A new work by Professor Welton is sure to arouse unusual interest, and his latest volume will enhance, if this be possible, the great reputation which he has already earned as a writer on educational problems.

The present volume is a searching analysis of fundamental problems underlying a theory of education, and so should appeal to a wide circle of readers. Professor Welton deals with problems which are of interest not only to the professional educators, but also to the thoughtful general public who realize that education means more than mere "schooling," that the future welfare of the nation is inextricably bound up with a true conception of the real meaning of education, and that this is not merely a matter of experience, but requires meditation and study. The main thesis of the book is that the theory of education must be related to a theory of life, that a true education is concerned with the whole width of life, and that the ultimate aim of education is the perfect organization of life under one great purpose which finds its meaning in one great ideal.

Professor Welton begins his enquiry by showing that the final aim of education must be sought in the whole of life, and that, until some agreement is reached as to the ultimate meaning of life itself—the real good of a human being—no agreement is possible, and there can be no theory of education which will be universally accepted. An attempt to arrive at a universally valid theory by concentrating on the means must also fail, since the end must determine the means. The problem of means is that of the influence of educative agents upon those who are to be educated, that is, the influences intentionally brought to bear so as to modify and determine the natural growth of child life. So that the consideration of means leads us back again to the question of the end. Until we agree as to the ultimate nature of life we can get no agreement of the aim and purpose of education; the same ultimate end will not be sought in all educative efforts, and, in consequence, the same emphasis will not be placed on the various educative means. The conclusions are negative and are perhaps somewhat disappointing to those who have recently been led to hope so much from the application of the methods pursued by the

physical sciences upon educational problems, and who have looked to experimental psychology and pedagogics for yielding demonstrably valid results. Professor Welton's warning, however, that numerical precision, which is the soul of physical science, cannot be obtained in spiritual life except on the assumption that mental life is merely a reflection of neural processes, is a very timely one, and deserves very careful consideration.

In Chapter II we are led to a close consideration of the end of education. The task of the educator is found to be a search for common elements in ideals and in an endeavour to reconcile apparent discrepant views by recognizing the truth in each. Such a recognition shows that the divergencies are not irreconcilably opposed. Professor Welton, by a process of Hegelian dialectics, shows that the various antitheses representing a partial and complementary apprehension of the whole truth can be synthesized. Such various conflicting views as the spiritual and animal nature of man, the antithesis between the individual and his environment, between the intellectual and moral aim of education, between liberal culture and utilitarian training, erudition and mental discipline, the question whether education can do everything or nothing, are analysed and synthesized in a brilliant manner, and with irresistible logic. The whole treatment is original and stimulating, and throws new light on some of the most perplexing questions in education. The conclusion arrived at is that the ultimate aim of life is spiritual, that spiritual growth is advance in spiritual capacity both to receive and to impart spiritual strength; that this implies that man's spiritual life is derived from, dependent on, and sustained by, spiritual agencies, which are supernatural in the sense that they are above and beyond the material; that man's life is not only material, but moral and social, and yet more religious. The ultimate aim of education is the perfect organization of life under one great purpose which finds its meaning in this one great ideal.

Chapter III discusses the vexed question of "Liberty and Authority in Education." It is a problem of real importance, and the pendulum has, throughout the ages, swung from excessive control and tyranny to a liberty which has frequently ended in anarchy. Professor Welton shows that both liberty and authority are essential requirements to the human soul and to human life, and that the true task is to reconcile them. Freedom implies self-control; the aim of all constraint should be to develop self-control, and this is only possible when constraint is felt and recognized as good. The chapter contains a most valuable criticism of Rousseau, whose eloquent revolt against all restraint is shown to be one of the chief causes of that product of modern education, "the spoiled child."

Chapter IV discusses the means of education, and by relating the means to the final aim of forcing the unformed spirit to accept what is good and true, shows that no means can be effective which do not keep to real life. Teaching must be related to actual life. Much of the criticism directed against our schools and the education given in them is due to the failure of bringing about such a relationship. The schools too frequently are quite out of touch and out of sympathy with the aims and ideals of the classes from whom the pupils are drawn.

Chapter V brings us to the agents, and so discusses the share the family, the State, and the Church have in the educative work. The discussion of the relationship of these agents is fruitful, and Professor Welton treats the "religious question" especially broad-mindedly and convincingly. The discussion of the training of teachers, and the proper function of the administrators of education, will appeal to many who have suffered from excessive control and supervision.

This brief analysis of the book will, we hope, induce many to peruse Professor Welton's latest contribution to educational theory with the care which it deserves. The whole book is closely reasoned, and deals with fundamental problems throughout. The entire treatment shows wide experience, great depth of thought, and splendid power of analysis. It is evidently the fruit of a long life spent in intimate communion with the entire problem of education.

S. S. F. FLETCHER.

The Teaching of Algebra (including Trigonometry). (xiv + 616 pp.) 7/6.  
 Exercises in Algebra, Part I (with answers). (x + 421 pp.) 4/-.  
 Exercises in Algebra, Part II (with answers). (viii + 551 pp.) 6/6.

By Prof. T. Percy Nunn, M.A., D.Sc. Longmans' Modern Mathematical Series.

THESE three volumes, written for both the teacher and the student, are intended to provide a complete course in Algebra for pupils who remain at a Secondary School until the age of eighteen or nineteen, for those preparing to enter the scientific professions, and for students in Training Colleges for Teachers. In "Exercises, Part I" there is practically no explanatory matter, this being left to the teacher, who in the volume written expressly for his benefit will find ample guidance, assistance and inspiration. The second volume of exercises is more independent of the teacher's help, and could be used by the student working alone, although he would greatly profit by consulting the teacher's volume and reading the notes and suggestions contained therein.

All who are engaged in teaching Elementary Algebra will welcome the advent of this practical handbook with real gratitude, not merely because it provides an excellent scheme and programme upon which a course of study may be based, but chiefly for the most helpful discussions on the pedagogics of the subject in which the volume abounds. The many reforms which the author advocates are here thoroughly examined, and the arguments in support of their introduction presented with such clearness and justice as to carry conviction. The difficulties which beset the path of the beginner when first introduced to a world of symbols are approached and surmounted with admirable skill. The intelligent use of the graph to interpret and record everyday observations in the workshop, the laboratory, and in nature, invest the subject from the start with a reality and interest which the author never allows to wane. Long before the beginner has made acquaintance with "directed numbers" he has acquired skill in the manipulation of formulæ, the solution of simple equations, the factorization of simple expressions, approached by way of the mensuration of simple figures and has seen how the use of sine and cosine, &c., simplifies problems in navigation.

The extension of the operations of Algebra to "directed numbers" is then made naturally and easily by yielding to the desire which has by this time arisen in the mind of the pupil to extend the field of his graphs and formulæ. In an admirable chapter Dr. Nunn shows how the rule of signs may be "discovered" from a distance-velocity-time graph; how by the use of coloured diagrams to represent directed areas the simple algebraic identities may be proved for directed numbers. Quadratic equations are reached by way of the parabolic graph, the question of imaginary roots being reserved for a later stage, "when the student will attack the question of complex numbers with a mind mature enough to appreciate the logical subtleties involved in it." At this stage the area of a portion of a parabola bounded by an ordinate and the axis is calculated by Wallis's method, and a first step is taken towards the Calculus. Wallis's "arithmetic of infinities" is also made use of in a later chapter in dealing with questions on mean position and root-mean-square deviation.

The section on logarithms opens with the consideration of certain "growth curves" of the type  $y = (1.3)^x$ ; which so long as  $x$  is integral can be solved by arithmetic; these are developed to include the cases where  $x$  is negative or fractional, or both; calculating devices such as the Gunter Scale and the slide-rule derived from the growth curve are considered, and finally the full theory of logarithms emerges. This method of approach differs widely from the usual method of teaching logarithms after the laws of indices have been considered. Dr. Nunn would reserve, until a later stage, all discussion on the fundamental laws of Algebra, such as the laws of commutation, association, indices, &c., a plan for which there is much to be said; but the question arises whether, in keeping the student ignorant of the important assumptions which the extended use of the



graph entails, the teacher is not being tempted to deceive. It is certainly easier for a pupil to assent to the principle of continuity when it merely entails the filling of gaps in a graph—habit will cause him to do it almost unconsciously—than to accept an argument from analogy expressed as a generalized law, but no teacher would like his class to grow up with the belief that he has actually *proved* that the product of two “minuses” yields a “plus,” or that the laws of indices, for example, can be *proved* for fractional powers. The graph should not be used to obscure fundamental assumptions; the student should have nothing to unlearn when he gets to the higher parts of the subject.

There is not space in this review to deal with Part II of the Exercises; it may, however, be remarked that it presents many new and attractive features, and includes sections dealing with the trigonometry of the sphere, map projection, and the theory of statistics to complete what the author terms a “mathematics of citizenship.”

A. HOLDEN.

**The Little Schools of Port Royal.** By H. C. Barnard, M.A., B.Litt. (pp. x + 263.) Cambridge University Press. 7/6 net.

MR. BARNARD'S book shows much industry and research. He has examined many original authorities, and has given us a valuable study of the educational activities of the Port Royalists. On some topics he has thrown new light, especially on the organization and work of the schools for girls, and on the use of emulation in those for boys.

When he gets outside Port Royal, however, he is a less trustworthy guide. For example, his many references to the schools of the Jesuits suggest that he has not thought it necessary to study that educational system from the inside, but has been content to base himself upon writers swayed by theological animosity. To say that that Order “set to work with a ready-made and inflexible educational code” (p. 207) indicates a strange ignorance of the history of the *Ratio Studiorum*, and references to Jesuit teaching and discipline show an equal ignorance of its contents and of the authoritative writings of Jesuits on the treatment of boys.

In the treatment of Port Royal itself the chief defect is a weakness of criticism which leads at times to inconsistency. We are told that the failure of the Little Schools was not due “to any inherent educational weakness” (p. 4), yet they had “principles inherent in their organization which would have precluded their permanence” (p. 216), and “it is really fortunate for the reputation of the Little Schools that their life was so short and that no opportunity was offered for the extension of their teaching work” (p. 233). Indeed, as Mr. Barnard himself says, the “grim” theology of Jansenism “supplies the key to the educational position of Port Royal” (p. 55). With the dogma of inherent depravity, no fruitful *educational* theory or practice is compatible, whatever intelligence may be shown in methods of *instruction*.

In these latter Mr. Barnard acknowledges that “the work of Port Royal was merely part of a great progressive movement” (p. 220), that “the education given by the Oratorians in some particulars shows an advance upon that of the Little Schools” though “the resemblance . . . almost entirely overshadows . . . points of difference,” and that the scholastic work of the Oratorians was much more extensive than that of the Port Royalists. Yet he shows a constant tendency to trace all reforms—both contemporary and subsequent—to the sole influence of the solitaries, even when he has to grant that in fundamental principles there was direct antagonism. The temptation to glorify his heroes by the depreciation of all competitors is no doubt strongly felt by a writer who has studied his subject intensively, but it is one which should be resisted in the interests of historic truth.

Although blemishes such as these are rather numerous, they are not so serious as to destroy the value of the book as a whole. To all students of the history of education it will be welcome, and we hope that a call for a second edition may give the author an opportunity for a careful revision.

J. WELTON.

**The Modern High School: Its Administration and Extension.** Edited by C. H. Johnston. (xviii + 847 pp.) Scribner: New York.

THIS volume is the co-operative production of various administrators, professors of education, and teachers. It is concerned with the school as a social institution. The first part naturally discusses the problem from the standpoint of the administrator who, if he is accustomed to think of his problems in a sociological way, will find the chapters on the "Legal Status of the High School" and the "School as a Business Enterprise" both informing and suggestive. The second part comes into more intimate touch with the problems of the schoolmaster. Dr. Colin Scott, for example, deals with the claims of society on the school curriculum. He gives several instances of the way in which American cities are making use of the intellectual forces of the school in the general interests of the community. At Los Angeles the high school pupils have actually made the designs for, contracted for, and controlled the building of several new schools in the city. What the effect of "realities" of that kind must have upon the attitude of the pupils towards their work every teacher will understand.

Part III is devoted to internal questions—school government, school clubs, school newspapers, school athletics, and the like. Perhaps the most interesting chapter in this section is that by the editor, who writes on "The Improvement of the High School Teacher in Service." It is chiefly descriptive of various efforts in the States to prevent professional staleness. It is characteristic of the difference between England and America that these efforts all take purely professional forms—teachers' libraries, teachers' meetings, methods of assessing work, &c. Here we tell a teacher to keep fresh by taking a good holiday. Our "qualified" teachers are perhaps too ready to rest on their professional certificates.

There is a fourth section which discusses various aspects of the possible extension of the social functions of the school. Interesting accounts of the communal service to which school buildings are put in different parts of the States, often under the general direction of the Principal, of the social service done by school libraries, school art galleries, school agencies for vocational guidance, &c.

The chief interest of these many chapters lies in the concrete description of new educational enterprise. At times one is tempted to think the book would have gained by the more vigorous use of the editorial blue pencil. Some of the theoretical discussions degenerate into the elaboration of the obvious. But taken as a whole we may commend the volume as describing a large number of inspiring educational efforts, and containing many practical suggestions for the extension of the usefulness of schools in the life of a modern community. J. A. G.

**Reading Aloud and Literary Appreciation.** By Hardress O'Grady. x+160 pp. G. Bell & Sons. 2/-.

MR. O'GRADY has already done the teaching of English a great service by his little book, "Matter, Form, and Style." Here he dealt with the problem from the standpoint of the ordering and expression of one's own ideas. In his present work, he is in the main concerned with the appreciation and adequate rendering of the ideas of others. The earlier chapters set out clearly and freshly the mechanics of utterance. They are delightfully free from the jargon of the voice expert. Indeed, he says at the end of this section: "I disclaim altogether any pretension to a knowledge of voice production, as expounded by elocutionists, but I may be allowed to say that, in spite of respiratory disturbances, I can fill a large hall with my voice without undue fatigue, and that I never had a lesson from a voice producer in my life; but I observed the general rules which I have set forth above." He rightly reminds us what pleasure Robert Louis Stevenson gave to his friends whenever he read aloud to them.

Perfect voice production may, in point of fact, accompany bad reading. The charm of the good reader comes from the spirit behind the utterance. It is the outcome of genuine appreciation of the message he is delivering, in all its

delicacy and suggestiveness. On this side of the work, the success of the teacher who concerns himself with reading aloud depends on the degree to which he can make the souls of his pupils accessible to the literary appeal. Here Mr. O'Grady is, perhaps, at his best. His own artistic temperament finds admirable expression in the treatment of poetry and prose alike. He has, moreover, a pleasant gift of humour which frees his book from pedantry of every kind. I know no book of its size which is likely to be more useful to an English master, whether he be specialist or in general charge of a class or form. The collection of exercises at the end of the book is ingenious, useful, and often amusing. J. A. G.

**Physical Growth and School Progress.** By B. T. Baldwin. (212 pp.) United States Bureau of Education (Bulletin No. 10).

Professor Baldwin's valuable report presents the results of a detailed statistical study of physical growth (or physiological age) and the school standing of a group of boys and girls from six to eighteen years of age. He distinguishes five parallel ages for every child—a chronological, a physiological, a mental, a pedagogical, and a moral age. These ages do not necessarily coincide, but in a first-class school the school standing or pedagogical age and the mental age (significant of intellectual capacity) would be the same.

His investigations were conducted in three efficient schools, and they led him to the conclusion that "the tall, heavy boys and girls, with good lung capacity, are older physiologically, and further along in their stages towards mental maturity as evidenced by school progress, than the short, light boys and girls." It follows therefore that rapid, healthy growth favours good mental development, and that the healthy, growing child should have plenty of physical and mental exercise." Further, he suggests that physiological age rather than chronological should be the basis of school grading. Well-developed boys and girls might, that is to say, be taken more rapidly through the school than is usually the case.

**English Composition.** By R. S. Bate. (viii + 423 pp.) G. Bell & Sons.

THE author's aim is to teach composition from the earliest stages. His method is based on Grammar and Grammatical Exercises of the orthodox kind; unless, to begin with the Interjection is a novelty. After dismissing this with a rule about notes of exclamation, the Noun is discussed—definitions, distinctions between Common, Proper and Abstract Nouns, modes of indicating Plural Number, Case and Gender, each section with an exercise. Next we come to Verbs, and in like manner all the parts of speech are treated for 120 pages. Some twenty pages are now devoted to Analysis, and a like number to the Syntax of the language. Finally, at Chapter XV, we read: "It is now time to begin composition on a more extensive scale." After nearly two hundred pages of preliminaries we may begin to write "paragraphs."

No teacher can fail to find here and there in the book a useful exercise and suggestion; but, as a method of teaching English Composition, the book is not suited for school use. Indeed, it is not quite clear that Mr. Bate meant it for that.

**The School, the Child, and the Teacher: Suggestions for Students in Training.** E. W. Adamson. (pp. 390.) Longmans, Green & Co.

MISS ADAMSON has attempted a very difficult task—to compress into so small a volume suggestions for the guidance of students in training, and a digest of principles which should govern the method of the various subjects in the school curriculum. The book has been carefully compiled, and has some good bibliographies. It is a summary of what has been accepted, and fairly generally practised, rather than an analytical survey or a suggestive criticism. Written for students in South Africa, it may be of service to those who are cut off from the possibility of a first-hand acquaintance with modern writers on educational theory, though it is doubtful whether a summary is of much value to inexperienced teachers, who find it difficult to grasp the significance of principles. The chapters on method are a challenge to the specialists. They reveal some of the inconsistencies of our practice.



**The Greyfriar Book of English Verse.** Edited by Guy Kendall. (xii + 171 pp.) Longmans, Green & Co. 2/-.

The poems in this collection represent those in use in the Lower and Middle School at Charterhouse. They are arranged in three parts of progressive difficulty. Although there are many school anthologies, this new one is so good that it may well find a place beyond the walls of Charterhouse. The choice is admirably catholic. It is, for example, a pleasure to find in such a collection poems like Burns's "Honest Poverty," Leigh Hunt's "About Ben Adhem," and Morris's "The Day is Coming." In his anxiety to interest the boys the editor has not lowered his literary standard. Nothing is included which is not of the best.

**Interest and Effort.** By E. C. Childs, M.A., Assistant Lecturer in Education in the University of Bristol. (pp. iii + 109.) Clifton: J. Baker & Son. 2/6 net.

THIS little book seems to us to show some promise. There are suggestive passages here and there; as, for example, on pp. 82-83, on the influence of a town environment; and the writer has evidently given thought to his subject. But careful reading of the book has not made clear what he means by effort or by interest, or what he conceives the relation between them to be. There is much about punishment, and Mr. Childs seem to hold that effort is always painful, and contrasts it with "pleasurable interest" (p. 96), but, as he has nowhere particularly analysed his concepts, this is only an inference, and it may be hoped that it is an unjust one.

J.W.

**Sense Plays and Number Plays.** By F. Ashford. (101 pp.) Harrap & Co. 1/6 net.

A HAPPY, because practical, protest against the formalities of "Didactic Materials," which, in the judgment of many, disfigure the "Montessori Method." Miss Ashford shows how the spiritual activity of the child may be stimulated by the teacher who has caught the idea of freedom and at the same time grasps the educative values of ordered sensory observation. She employs no other materials than common household utensils or children's natural treasures picked from the home cupboard, the wood, the seashore, or the hedge, instead of being "painstakingly devised with mistaken ingenuity by some adult mind."

**Historical Ballads.** Selected and edited by W. Macdougall. (viii + 136 pp.) G. Bell & Sons. 1/-.

THIS collection of forty Ballads has distinct merits of its own, which make it a welcome addition to existing collections. The editor has ranged over the whole period of British History; he starts with "King Lear" and ends with Longfellow's "Warden of the Cinque Ports." Several ballads are included which will be new to schoolboys. There is a minimum of "apparatus" in the form of notes, &c., but what is given is helpful. The book is admirably printed and bound, and is, moreover, issued at a very reasonable price.

**Poems and Prose for Comparative Study.** Arranged with Notes, &c., by J. Eaton Feasey. (viii + 130 pp.) Marshall & Sons. 1/6.

A suggestive little book which will be useful to many teachers. As outlining methods of treatment of particular poems, students in Training Colleges interested in the literary side of school studies will also find in the book valuable material for critical consideration.

**English Letters.** Selected for Reading in Schools. By H. J. Anderson. (viii + 135 pp.) Longmans, Green & Co. 1/6.

[A very useful and representative collection, chosen with sound judgment from the standpoint not only of literary value, but also of the relation of the subject-matter to the interests of schoolboys and girls.]

**The General Education Board.** 1902-14. (xv + 240 pp.)

[A beautifully-printed and illustrated record of the activities of the Board founded by the munificence of Mr. J. Rockefeller in 1902. A fuller notice of this interesting book is reserved for a later issue.]

## BOOKS RECEIVED.

**The Next Generation** (with Supplementary Pamphlet). By F. G. Jewell.  
(xi+235 pp.) Gunn & Co. 2/6.

(AN interesting study in the Physiology of Inheritance, written for senior boys and girls.)

**Psychological Studies** from the Psychological Laboratory, Bedford College.  
(161 pp., quarto.) University of London Press. 2/6.

**The Research Department: What it is, What it is doing, What it hopes to do.**  
By Henry H. Goddard.

(AN interesting illustrated pamphlet describing the research work carried on at the great Training School for the Feeble-minded at Vineland, New Jersey.)

**A Critical Study of the Hillegas Composition Scale.** By Isidore Kapgetz.  
(Reprinted from the *Pedagogical Seminary*, December, 1914).

**Environment: A Natural Geography.** By G. R. Swaine, F.R.Met.S. Ralph,  
Holland & Co. Cr. 8vo., 226 pp.; 1/9.

**A Regional Geography of the Six Continents.** Book I. Europe. By Ellis  
W. Heaton, B.Sc., F.G.S. Cr. 8vo., 127 pp.

**A Little Book on Map Projection.** By Mary Adams. Demy 8vo., 108 pp.;  
2/- net.

## NOTES.

THE new Society of Education made its first public appearance at the London University, on January 6th, during the week of Educational Conferences. The formation of this Society is the result of a very general feeling among educationists that it has now become desirable and possible to bring the various and often isolated activities of educational workers into closer association. The inaugural meeting was a declaration and practical application of this aim. Professor Bonpas Smith discussed the general directions in which educational research might be undertaken; Mr. Holland, Director of Education at Northampton, dealt with the need for scientific administration; Professor Foster Watson contributed a paper upon the value and wide possibilities of research in the history of education; Dr. Ballard gave an account of his own pedagogic research in norms of school work; and Mr. Burt, Psychologist to the London County Council, indicated ways in which the psychologist and the pedagogical research student can most helpfully co-operate.

The first ordinary meeting of the Society will be held in the first or second week in March.

Educational Societies of all kinds are invited to apply for affiliation.

Applications for membership are also invited from persons who are engaged in teaching or educational administration, or are otherwise interested in education.

The annual subscription for members is one guinea; for members of affiliated societies, 10/6.

Enquiries should be addressed to W. G. SLEIGHT, M.A., D.Lit., Hon. Sec.,  
74 Gower Street, London, W.C.

THE Edinburgh Provincial Committee for the Training of Teachers has been well advised in equipping a Pedagogical Laboratory in connexion with its new Training College. The Laboratory has already begun its work, and the first of its reports has been issued. It deals with the vexed question of the Montessori "Method"; that is to say, with the use of the didactic materials which are known by the Dottorressa's name. Miss Drummond and her colleague, Miss Mackenzie, carried out their investigations in a Free Kindergarten in the neighbourhood of the Canongate. The report is clearly the work of capable observers, but the period covered and the number of children dealt with are both insufficient to furnish ground for a final generalization. The difficulty of such an investigation lies in the choice of the

factors which are to decide the issue. Is it to be decided by the success with which the apparatus arrests the attention of the children, or by improved sensory acuity, or by advance in intelligence, or how? This preliminary difficulty is not discussed. The pamphlet is descriptive rather of the things that happened. As a scientific document it is inconclusive, but full of human interest in spite of that. It is eminently fair. Apparently the method of approach to reading and writing proved least satisfactory, measured, that is to say, by its attractiveness to the children themselves.

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READERS of the first instalment of Professor Netschajeff's article in this issue of the Journal will find further material dealing with the subject of Elementary Education in Russia in an article by Mr. Ivan Klyuzhev in the *Russian Review* of last May. The gaps which Professor Netschajeff has necessarily left in his own paper are adequately filled by Mr. Klyuzhev, who deals with his subject from the standpoint of a progressive member of the Duma who has often been in charge of the recommendations of its Education Committee when these have been dealt with by the House.

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THE Report of the December Meeting of the Training College Association has not been received. The paper by Professor Lloyd Morgan, printed in this issue, was read at that meeting.

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A FIRST general meeting of the Northern Branch of the Training College Association was held on Saturday, February 27th, at the University of Leeds. The Rev. Canon Morley Stevenson presided. An address was delivered by the President of the Association (Professor T. P. Nunn).

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TO TEACHERS IN TRAINING COLLEGES.—Register! **Register!! REGISTER!!!** The first issue of the list of Registered Teachers is shortly to be published, and it is very desirable that the Training Colleges should make a good appearance in that list. If we do not believe in Registration, there is little hope for the ultimate success of the Register now in course of formation.



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**The Dawn of Character: a Study of Child Life.** By EDITH E. READ MUMFORD, M.A. Lecturer on "Child Training" at the Princess Christian Training College for Nurses, Manchester. Crown 8vo. 3s. 6d.

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**Teacher and Teaching.** By The Rev. RICHARD H. TIERNEY, S.J. Crown 8vo. 3s. 6d. net.

The purpose of this book is to examine those fundamental principles in which the vocation to be a teacher may be said to consist. Drawing upon many years experience as an educationalist, the author lays down those fundamental and necessary qualities of every teacher, who, holding in his hands the destiny of his pupils, would so lead them that they should come at length to the stature of the perfect man.

**A Primer of English Citizenship for use in Schools.** By FREDERIC SWANN, B.A., B.Sc. (Lond.), Scholar of King's College, London; formerly Head Master of the Grammar School, Ilkley. Crown 8vo. 1s. 6d.

# The Journal of Experimental Pedagogy

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## THE CULT OF FLABBINESS.\*

BY PROFESSOR J. WELTON, D.Lit.

HOWEVER much men may differ as to what is best worth having and seeking in life, all are agreed—at any rate in theory—that earnestness and perseverance in the seeking are desirable. The man or woman who vacillates in every purpose and yields to every fresh influence, who is turned aside by every little difficulty, who is “everything by turns, and nothing long,” who tires quickly of every new pursuit, attains nothing worth having and fails to win the confidence and respect of his fellows. Nor is he more successful who is half-hearted in all he undertakes, who regards idleness as the greatest of blessings, and aims at making all his ‘work’ as near an approximation as possible to that fancied state of beatitude. Without earnestness in the pursuit of purposes life misses its chief joy; and unless its purposes are unified by a common ultimate end it has no meaning as a whole, and so cannot yield its due amount of satisfaction. This is to miss happiness, for we must all acknowledge the truth of Aristotle’s teaching that happiness is found in the satisfaction of need. The fuller the satisfaction, the greater the happiness.

Now, the cravings of our nature are many, and it is fatally easy to mistake those that are the most obvious and the most easily excited for the whole. The child comes into the world with his nature in embryo. His true nature is all that it is in him to become: into that he has to grow, and he grows by living. His capacities can only be brought out by life. But it is not a necessity of life that all its capacities *are* brought out, or that they are developed in the due proportions in which their successful exercise yields the highest satisfaction or happiness. A capacity is also a need; an awakened capacity is a felt need or craving. Evidently, human nature is fully alive only when all its capacities are made into cravings in such a way that the gratification of one never hinders the satisfaction of others.

The child comes as a stranger into life, and knows not what to seek. He has cravings, but they are vague. Only by experience do any of them become defined; only by experience does he learn how to secure the satisfaction of any of them; only by experience does he find that some gratifications lead to distress and sorrow. Obviously, the process will begin with his simplest and most obvious needs—those bodily cravings the due satisfaction of which gives pleasure, and the undue gratification leads to pain. The great question for each one is: Is the process to stop there? Is the whole life to remain on the level of its beginning, seeking its happiness in pleasant bodily experiences and conditions? They are enough for the babe, but even the young

\* A Paper read before the Sheffield Branch of the Teachers’ Guild, Feb. 19th, 1915.

child craves dimly and vaguely for those higher things which we rightly call spiritual—for love, for knowledge, for beauty. The whole future depends upon the degree to which these are fostered. For they are the distinctively human elements in human nature—the features that mark it off from the beasts that perish. These it is that bind our imperfect human nature to the divine nature; it is the craving of these for satisfaction that enables us to share in the working out of the divine purpose. In the due satisfaction of these, then, lies the highest happiness possible to man.

Let us remember, too, that these are never jaded and satiated, as our bodily cravings so easily are. The highest we know of ourselves is our power to see in imagination a life better, nobler, and more beautiful, than that we are now living, and to direct our whole strength to the realization of that fair vision. Always we are realizing it, but never is it attained. For ever as we draw near the vision recedes and at the same time develops; more beauties unfold themselves; deeper and wider possibilities are seen, and as what but now seemed far ahead is attained, vistas of yet higher and nobler achievement lead from it. Thus, the seeking of the higher spiritual purposes both calls for and cultivates those great qualities of earnestness and perseverance without which no life is either happy or effective.

Far otherwise is it with the development of life when the affections are set on things below, and not on things above; when the ultimate aim of life is material instead of spiritual. The great characteristic of the cravings of sense is that they are recurrent and not progressive. Indeed, the time soon comes when their gratification yields less and less satisfaction: we reach satiety, and find nothing new to rouse the jaded appetite. Then life seeks nothing but its own maintenance on the level it has already reached. It has nothing to inspire it, and it becomes more and more filled with a vague discontent which a feverish seeking for excitement fails to appease. The cravings for the higher things of the spirit which have been disregarded are not wholly suppressed, but they show their presence in a blind groping after something different from what life actually offers. This feeling may increase till the *vanitas vanitatum* of the preacher is felt to be a fit description of all experience. Only through the pursuit of spiritual purposes can a man find peace at the last.

It is, then, easy to see that undue devotion to material interests, whether in an individual or in a nation, tends inevitably to sap strength and earnestness of character. It is, indeed, a state of arrested spiritual development; the man retains the spiritual stature of a child, and his really human powers have remained rudimentary. The greatest need of our times is, undoubtedly, that there should be a general return of the nation to that apprehension of the value of the things of the spirit which the material preoccupations of these latter years have gradually dimmed. Of course, it must be recognized that some people are incapable of as high and as effective life as others. There are inherent differences in

moral and intellectual strength, just as there are in physical strength. Far is it from my thought to lay all the shortcomings of grown men and women at the door of those who trained and cared for them in youth. The question for us, however, is the practical one of whether there is anything in our modes of bringing up children which either tends positively to cultivate flabbiness of character and intellect, or does so indirectly by omitting to cultivate the opposite characteristics. If it be true that

“Life is real, life is earnest,  
And the grave is not its goal,”

then whatever tends to make life merely superficial, and so unreal, to hinder its being taken seriously, to fix the affections on those pleasures of which the grave *is* the goal, tends to cultivate spiritual flabbiness.

There is no need to inquire whether the age in which we live is more or less flabby in moral purpose and intellectual life than those which have preceded it. Like generations that have gone before us, our own is convinced that it has attained a higher stage of human development than has ever before been reached. Like the prophet of old, it refuses to hold life worth living unless it can feel assured that it is better than its fathers, and it scouts as pessimists all who are not vociferous in proclaiming its superiority. However this may be, it can hardly be denied that signs of a want of strenuousness of purpose and soundness of judgment are not wanting among us. Certainly, there is much in present-day conditions that tends to arrest spiritual development. For that requires self-concentration. But nowadays it is easy to be very busy doing little or nothing. Many lives are full of the surface attractions of all kinds of social, political, or reformatory effort. Such people are always attending committees and meetings, assisting at functions, or advocating their pet plans for the reform of the world. So they imagine themselves very industrious, even though these various activities are made excuses for neglecting the duties that lie at their door. And when the total effect is estimated it is apt to illustrate the old saying about “much cry and little wool.”

Even professional work of an essentially spiritual character, such as ours, may become a mere matter of routine, because no meditation is given to it outside the hours in which we are actually engaged in it. Or the feverish spirit of unrest invades us even there. We are always asking for something new, we are afraid of being thought old fogies, so we are set on following every vagary of educational fashion. Of course, both to ourselves and to others we style this “being in the van of educational progress.” In our rush to be “up to date” we too often forget to consider whether the new is also the true before venturing to submit to it the little ones committed to our care. Surely, critical testing by the application of definite ultimate principles should precede trial in practice. True experiment is not a haphazard doing of now this and now that to see what will happen. That corresponds to the ‘experiments’ a small boy would make if turned loose in a chemical



laboratory. We really experiment when we try how best to carry out a method which has already stood the test of criticism, or when we attempt to get an answer to a definite question. In the ultimate principles of life, on which depend the ultimate principles of education, the new is never true, nor the true new. To the test of such principles all new suggestions should be brought. But this demands that quiet meditation to which the bustle of modern life is antagonistic. Without it our educational theory is shallow, and our practice undecided, for we shall be equally ready to listen to the next new prophet. In other words, it is wanting in consistency and in persistency, and these are lacking because strenuous thought has not been given to each plan before it was adopted as a purpose.

What is true of one line of spiritual activity is true of all. Continuous bustle is an unfavourable environment for thought; and bustle is the characteristic of our day. Many things have co-operated to make this inevitable. The growth of large towns, the enormous increase of facilities for communication, have all increased the number and clamour of external calls upon attention. In this bustle many of our children have to grow up, and its general tendency is to keep them wholly occupied with the trivialities of experience which change from moment to moment.

There may, then, be much want of stability of character and of soundness of judgment in a life full of external activities. Though busy, it is not strenuous; for strenuousness implies the persistent pursuing of a great purpose, not the constant turning from one object to another, none of which is brought to the bar of judgment, and so, none can loom really large in the personal life. To fill life with a kaleidoscope of trivialities is the favourite modern recipe for the production of flabbiness.

Were a child left wholly to himself in such surroundings as are common to-day, it would be, humanly speaking, impossible that he should ever develop strongly. The promptings of his sensuous nature are more insistent felt than are those of his spiritual nature. So he follows every impulse, he forms no true estimate of what is worth trying for, he drifts hither and thither on the superficial, though often tumultuous, waves of life. The habit of following the line of least resistance and of seeking always the primrose path binds him more and more tightly in its chains, and as he grows older this habit becomes truly a second nature.

The child is a raw beginner who has to learn that most difficult of all works of skill—the art of living. No doubt we all grant this: not even the most inveterate of arm-chair theorists can deny it. We grant it? Yes, in words! Do we always grant it in reality; that is, in practice? We know well that none of the minor forms of skill can be acquired without both teaching and practice. The teaching may be given in various forms, but it is always there, and it is fully successful

only when it includes example as well as precept. Yet in much educational doctrine of the present day there is implied the assumption that nothing effective can be done in teaching that highest and noblest form of skill which each one of us needs daily and hourly in the conduct of our own lives. We are exhorted to look on while the child guides his own life, determines his own activities, and forms his own habits of feeling, desiring, and thinking; and to shrink from interfering lest we should impair in him that most precious of human qualities—his liberty. Excellent is the motive: lamentable the logic; deplorable the results. The doctrine is based on a false view of human nature, which the whole experience of the human race has proved to be merely a sentimental dream. It assumes that man is born both free and good, and it sees the source of all the admitted evil in the actual lives of men and women—aye, and of children, too—in the corrupting interference of society. Of necessity it ignores the fundamental question of how the mass of mankind can have become thus corrupt if all started with no impulses except those towards the good and true, and with an original power of willing. If the power to will is present from the first, and man's nature prompts him to will nothing but what is good, how comes it about that man has ever gone wrong? That the human will might be balked by the intractability of the physical world is easy to understand. But on the hypothesis of inherent goodness and freedom, it is impossible to explain how it could have arisen that the will to do well should ever be hindered by human opposition.

Verily, the doctrine is false in both its main contentions. It is simply not true that children are born with nothing but good tendencies. The doctrine of original sin—that there is inherent fault and corruption in the nature of every man—is a theological expression of absolutely certain facts, and the facts are there to be reckoned with, whether we look them in the face or try to shut our eyes to their existence. There is in human nature a two-fold tendency, of which, I am sure, we are all conscious in ourselves. There is a will to do evil as well as a will to do good. It is not simply that we have impulses and instincts which, according to our education, may inspire us to good or to bad conduct. It is deeper than that. It is a tendency to seek the evil by absorption in the pleasures of sense and neglect of the calls of the spirit.

As I have said, the child is a human nature in embryo. Its growth in grace means the gradual but continuous subordination of the tendency to evil by the tendency to good. It is a struggle throughout, and only through this inner struggle can the full measure of human nature be attained.

As this is so, it is obviously false to say that the child is born free, and that all authoritative constraint is an infringement of his rights. He has to learn to be free, and we have to teach him. And the means is through the inculcation of duty. Nowadays we hear more of 'rights' than of 'duties.' Duty has, indeed, gone out of fashion. In books on education we read little of it, and too often

we find little or nothing of it in the bringing-up of children. Prudence may be appealed to, but the simple categorical, "thou shalt," or "thou shalt not," is looked at with suspicion. Parents hesitate to enforce their commands, even when they go so far as to give any, and teachers feel uncomfortable when driven by the necessities of the case to appeal to force to secure obedience. We are exhorted to respect the rights of the child, among which the most sacred is that to liberty.

But freedom is the end sought, not the starting point of the process; for we are free just as far as we can act effectively, without hindrance either from our own contrary tendencies or from the opposition of any part of our surroundings. Mere absence of external interference is not freedom. That is only one aspect of the matter, and, in most cases, the less important. Hindrance from within ourselves is far more serious and far more common. If we think this out we shall see that to speak of such hindrances implies either that our wills are set upon some end, but that we lack power to put a curb upon our transitory impulses, or that we are torn between two wills—that which our reason and conscience approve, and that which draws its strength from our lower nature. So that in our deeds we find the truth of the Apostle's words: "That which I do I allow not; but what I hate that do I."

We do not, then, begin by being free in our nature, and become gradually enslaved by those around us, as Rousseau and his disciples so mischievously teach. We have to conquer freedom, and the chief enemy to be overcome is within ourselves. Only in proportion as that battle is won can we fight successfully against external obstacles; for only so have we the power to persevere in the face of difficulties. As de Tocqueville says: "To be master of oneself is the secret of strength." We have to win our way into freedom, just as we have to win our way into intelligence and soundness of judgment. And in each case the way leads through struggle. In the words of Froebel: "By renunciation, by the sacrifice of the material for the sake of the spiritual, does man approach the perfection of his being."

In this struggle the weakness of the child calls aloud for help in all understanding ears. It is cruelty, not kindness, to refuse this help, and to leave him to his own unaided feebleness unilluminated, as any tentative effort he may make must be, by experience. Those who would really educate him must shed on his way the light of their own greater knowledge and experience, must add to his weakness the support of their own more matured strength. They must teach duty as they must teach truth. In both cases the essence of successful teaching is the warming of the heart by love for that which is to be sought, and the encouraging of real effort in the search. If either of these be wanting, to the degree to which it is so, not spiritual vitality but spiritual flabbiness is being cultivated. As Froebel insists: "That a boy's natural activity may be raised to genuine firmness of will, it is essential that every exercise of it should both spring from, and be in constant relation to, the development and formation of his spirit."



This implies both interference and constraint. Left to himself the child remains at the mercy of every passing impulse, he attains no strength of character, he develops no real and vital interests. He is on the way to become the slave of his passions, the puppet of every passing caprice. In him grows no sense of duty, for duty comes from without. It appears first as a law imposed upon him by those among whom he lives, and only as he identifies his personal life with the social life does it become the inner principle by which he governs himself. So we see both the meaning and the truth of Froebel's saying that "boyhood is the time for discipline, because the child is then self-conscious," and that "the main purpose in the training of boyhood through instruction is to cultivate an active, firm, and persistent, will, bent on the pure object of a true human life." And he gives us the essential features of good discipline in the words: "In all good education necessity should evoke freedom, law should induce self-determination, external compulsion should develop internal free will."

Happily, in such a society as ours, no child can be left wholly to himself. Constraint is put upon him in many ways by the social life in which he shares, and by the clashing wills of his companions. But this is inadequate, for it is wanting both in system and in intention. To it needs be added the intentional, continuous, co-operative pressure of the great and professedly educative influences of home, church, and school, showing him clearly the way he should go, urging and encouraging him to press onwards along it, setting up the obstacle of enforced command or prohibition when suggestion, stimulus, and encouragement seem likely to prove inadequate. The will of the educator must be always on the alert, not to thwart the budding good will of the child, but to train and prune it, and that in such a way as not to lessen but to increase its vitality. Here, surely, is the art of arts. As Locke says:—"He that has found a way, how to keep up a child's spirit, easy, active, and free; and yet, at the same time, to restrain him from many things he has a mind to, and to draw him to things that are uneasy to him; he, I say, that knows how to reconcile these seeming contradictions, has, in my opinion, got the true secret of education."

All this applies to intellectual and physical training as truly as to moral training. Throughout, the will of the educator should be exerted to support and strengthen the will to do right of the child; not to thwart it, still less to break it; but also, not to supersede it. Training of any sort which does not call for real and strenuous effort is a direct cultivation of flabbiness of both will and intellect. For, indeed, these can be separated only in artificial mental analysis. We foresee and plan as well as strive, and we strive to learn and to understand as well as to act.

In many cases a child who is turned aside by the smallest difficulty in most of his pursuits, in others shows a good deal of perseverance. The latter are the things he thinks worth doing; in the

former he sees little value. Some sense of value there must be or no free effort is made. But the feeling that a thing is worth doing grows in many ways, and has its root in many soils. It means that in some way the effort is felt to enrich life—to give a greater fullness to living. Always there is, as a spur to willing effort, a desire to gain something which seems worth gaining. In the pursuit of this, obstacles and discomforts are disregarded. So is formed a habit which we all know to be very necessary for a successful life, for all have to do many things in the actual doing of which no joy is to be found, and for this a strong habit of doing cheerfully all that comes in the day's work is the most trustworthy support. Take, for example, a boy learning to play football. He feels a strong desire to play well. But this has to be learnt by much intelligent practice. There are many obstacles to success, many painful experiences to endure, much self-control to acquire. Strength and pluck are not enough; sound and rapid judgement and firm command of temper are also required. Now, if no progress were made in the game, keenness would soon die away. It is the sense of successful effort that keeps up the ardour. So the boy is not only learning to play football; he is also forming the habit of strenuous effort in that kind of activity. But at those other pursuits—too often, alas! his lessons—at which he works half-heartedly, or only under compulsion, he is forming the opposite habit of shirking as far as possible all that is not attractive and pleasurable. Whether we wish it or not, one or other of these habits is always growing in every one of our children. As it grows it increases in strength, and the likelihood of a fundamental change in life becomes continuously less.

If we find, then, that our children are not as strenuous in their studies as in their games, we shall do well not to accept this as a mere matter of course, but to ask ourselves: first, why the former appear less worth doing than the latter; and, secondly, whether in their lessons as much personal effort is—I won't say demanded, but—allowed as in their games. I fear that the custom of treating a class as a mental and moral unit carries with it a deal too much tempering of the wind to the shorn lambs at the bottom to the detriment of the majority of the more vigorous spirits; and that the aim of covering a great deal of ground leads to an undue removal of difficulties, in order that, in appearance, time may be saved. So grows up an unfounded distrust of the capacities of children. Surely, in all this we have a case of losing life in the attempt to save it. If any child is not continually grappling with what to him are real difficulties, he has no chance of developing intellectual vigour. He becomes intellectually flabby.

The spirit of modern education, like the spirit of the age which it both reflects and helps to mould, insists far too little on the splendour of hard work. Formerly, boys were given their tasks, and required to learn them mainly by their own efforts. They were thus helped to form the important habit of doing well tedious or distasteful

work when necessity arose. But few of them learned the equally important truth that the greatest joy of life is to be found in work we love. To most of them work was nothing but an unpleasant necessity, at any rate so far as it was intellectual in character. So the schools were very imperfect agents of education.

Nowadays we go to the other extreme. Everything is to be made pleasant, and, because the joy of work is not recognized, or because children are thought to be incapable of rejoicing over successful effort, pleasant is made synonymous with easy. So, again, the joy of real work is not learnt, and in this case the habit of working on occasion at the unattractive is not cultivated by the school. For example, only through the fear of calling upon children for hard mental work can one explain the excessive amount of collective oral teaching now so common in schools of all kinds. In its very essence such teaching is antagonistic to the development of power of dealing with intellectual problems. That demands quiet leisure. But the oral lesson must press on, or it loses the vivacity which is its chief charm. Under that external appearance of activity is often hidden much internal flabbiness. It is easy to fall into the mistake of supposing that each pupil has done what the class as a whole, and under the careful leading of the teacher, has accomplished. But this is seldom, if ever, the case. Any of the individual pupils may have shirked just the point that was difficult to them personally, and this is often not discovered unless the same point is a difficulty to every one. Moreover, the teacher usually does all the essential thinking. The children have only to take very minute steps in following him, and not all of those steps are taken with a clear idea of where they are leading. Further, the temptation to keep them alert by offering them amusement, rather than by calling for effort, is one very difficult to resist when teaching a class orally. So, what should be work because full of an object, and delightful because that object is being attained, becomes mere objectless play as far as the children are concerned, and cultivates that very habit of following the flowery way which emasculates both will and intellect. Oral teaching is of most worth when it prepares the way for the posing of a problem which the children are left to work out for themselves. Too frequently the problem—if, indeed, a problem be there—is solved there and then by the teacher with the assent of the class. It is too often held up as a glory of modern methods that, while they make very heavy demands on the teacher, they make things very easy for the child. If we wish to turn out of our schools mental and moral jelly-fish, well and good. But if we wish to produce real men and women, spiritually sound and mentally sane, let us take heed to our ways. No reform, it seems to me, is more urgently needed, both in our homes and in our schools, than the more definite evoking of the wills of the children as the main instruments of their own education—in discipline, by some form of limited self-government; in learning, by the encouragement in every possible way of increased individual effort.



But the most stimulating method will not succeed in arousing a real desire to learn that which seems of no use. The most fundamental task of education is to help the child to reach strength of purpose and clarity of thought, despite the incessant temptations to moral and intellectual superficiality by which he is beset. It is a two-sided process—a synthesis of two spiritual energies. The primary is that of the child; the secondary is that of those who try to influence him. It is equally true that there is no education outside the will of the child, and that there is none apart from the will of the educator. But while the child is one, the educators are many. In this lurks a great danger. If the influences of the educators are actively or passively antagonistic to each other, their combined effect is reduced in proportion to that opposition. Then the child is left without the help his weakness requires.

Now, the two educative influences which especially concern us are the home and the school. Unless these heartily co-operate, the education a child receives hardly deserves the name. Each is actively engaged in urging him by every means in its power along a certain way of life. If the ways do not coincide, at least in general direction, the conjoint result is small, and the more they diverge the more restricted it is. Here is a consideration that is too often almost, if not quite, ignored. The custom of using 'education' and 'schooling' as synonymous terms, of talking of sending a child to school to be educated, of regarding teachers as the only educators, has a disastrous influence both on people's thoughts and on their practice. The bustle of life of which I have spoken tends so to engross parents—especially mothers—that their duties to their children are in danger of being very imperfectly performed. The idea that they are relieved from responsibility for the education of their little ones, that this, indeed, is officially taken out of their hands by State and school, strengthens this evil tendency. At the same time, all connected with schools are apt to magnify unduly their office. They rather welcome the indifference of the parents, and resent any criticism from the home of what is done, or left undone, in the school. All this is most earnestly to be deprecated. Not only is the school as incapable of doing the educative work of the home as the home is of doing that of the school, but neither can do its own work effectively without the support of the other.

It is true that while the child is young his likings are vague and indefinite. But from the very beginning of his life these nebulous desires are being moulded by those about him. In his family he draws in from his earliest infancy views and opinions as to the relative worth of things, and these, as he grows older, he more or less fully and consciously accepts. The school may purify, enlighten, and enlarge them; may develop the mental habitudes which they are forming, but it can do so only on condition of understanding them, of accepting and sympathizing with them as far as it is possible to do so, of asking always whether those of them which at first sight seem

objectionable are so because they are wrong in themselves, or merely because they are different from those of the social circle in which the teacher has his own spiritual home, and which he shares. To ignore the influences of the home and the out-of-school atmosphere is to insure a plentiful lack of vital interest, and a consequent discontinuance of such intellectual activities as the school has insisted upon as soon as school days are over. This means that intellectual vitality is at a low ebb, that intellectual flabbiness has become the habitual state of mind, at least as far as school studies are concerned, and too often in relation to everything outside the material life of the senses. Then, after school life is over, nothing is read which demands thought, nothing is said which indicates thought. Thought has become a labour too toilsome to be borne. Even amusements which involve thought are scouted. The picture house is preferred to the theatre, and in the theatre the most inane of musical comedies which tickle eye and ear take the place of plays which make a deeper appeal to the spiritual life.

So far as what is taught in school fails to appeal to the parents and friends of the scholars as really worth learning and doing, so far there is at home passive, if not active, discouragement of any scholastic efforts the children may be inclined to make. And this means that, as far as this discouragement goes, there is being formed a habitude of mental indifference which is a prime condition of flabbiness. Here, too, it seems to me, there is urgent call to set our educational house in order.

I find, then, the possible instruments for the development of moral and intellectual flabbiness in an undue suspicion of authority, resting on an untrue conception of human life and of the liberty which is its crown; in an undue, if often kindly intended, lessening and removal of difficulties which are the only real calls for effort; in an undue neglect by the schools of the thoughts, feelings, and general mental attitude, of the home circles of their pupils. There are, doubtless, others, such as the actual state of society, which are not directly within our control, and which make in the same direction. I am conscious that I have treated even these very inadequately, but I have tried to put before you views which seem to me important, and at the same time to be largely ignored in act, even if accepted in word. I believe that the question we have been considering is of the most vital importance to the nation. It is neither more nor less than that of the elevation or the degradation of the national character. On us all the obligation is laid of doing what lies in our power to maintain and to increase the traditional English qualities of strength and perseverance, of seeing in difficulties only obstacles to be overcome, of taking as the motto of every Englishman: "Whatsoever thy hand findeth to do, do it with thy might."

## THE TRAINING COLLEGES AND THE WAR.

BY PROFESSOR T. PERCY NUNN, M.A., D.Sc.

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Part of a Presidential Address to the Training College Association delivered on  
December 18th, 1914, at the Annual Meeting in the Caxton Hall,  
Westminster.

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THE War has not only been an occasion for showing that our profession is ready to carry its full share of the burden of national responsibilities,<sup>1</sup> it has also served as a touchstone, trying, as nothing else could have tried, the quality of our work. Von Moltke gave to the German schoolmaster chief credit for the victories of 1870. In this country there were widespread fears lest, when the long-dreaded crisis came, the British schoolmaster might prove to be a main cause of national disaster. Our obsession by the doctrine of interest was believed to have contributed largely to a dangerous loosening of the national moral fibre, and "baleful prophecies were rife" with regard to the result of a contest between the disciplined manhood of Germany and a democracy taught in its schools to choose the primrose path of pleasure and self-assertion rather than the stony way of duty and self-repression. Such fears were, of course, never warranted by the actual trend of our educational developments, but it was difficult to justify our ways to the layman. It was vain to combat ancient prejudices by appeals to modern psychology. It was useless to argue that ideas and ideals have no dynamic power except as vehicles of the spontaneity of the individual; useless to demonstrate that discipline and freedom, so far from being antithetic, mutually involve one another. But, as I have said, the War has done what argument could never do. It has evoked in a people, better able than ever before to realize the horrors and the cost of warfare, an outburst of self-sacrifice unexampled in their history. Men formed in our elementary schools and trained for their work by methods which from year to year have approached more nearly to the spirit of those schools, are performing on the fields of France feats of endurance, valour and devotion that will decorate our annals for ever. It is ridiculous to suppose that these deeds express qualities called suddenly into existence, or that they are due to the dramatic revival of moribund racial traits. Such psychological miracles do not happen. Just as an apparently sudden "conversion" really reveals mental changes long prepared in secret, so assuredly the efflorescence of virility which has so astonished our pessimists is largely the manifestation of the latent results of the educational forces which have formed the present generation.

We may legitimately take much comfort from this evidence of the general soundness of our ideals. It will encourage us to press forward with more confidence in a direction shown by so searching a test to be

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<sup>1</sup> The address began with references to the very notable contribution of the teaching profession to the armed forces of the Crown.



the way of advance for the nation as well as for the individual. Moreover, in the midst of events which, to some, prove only that all education ends in futility, it should help to sustain our enthusiasm, and our belief that our hands may yet do much to build up the City of God.

There is no need of argument to show that, for our profession, very much depends upon the attitude which the nation will take towards education when the storms of war have passed away. In attempting to forecast that attitude, an Englishman must start from the assumption that the ultimate victory will fall to the Allies. What effect will that victory have upon educational progress in this country? There are many who foresee a renewal of national energy, a renaissance which will be expressed in all departments of our spiritual and material life. I am bound to own that I cannot share this optimistic view. In the first place the oracle of history speaks, as usual, with a double voice. It tells not only of the marvellous German expansion which followed Sedan, but also of the era of obscurantism and reaction which followed Waterloo. Is it certain that the former phase of history will be repeated rather than the latter? I wish that the omens pointing in the unfavourable direction could safely be ignored. Unhappily, educationalists have always had to fight against the Englishman's inveterate distrust of ideas, and his long deep-rooted suspicion of the school as a place where those dangerous things are apt to be propagated. And, most unfortunately, the cause for which it has always been so hard a task to gain our countrymen's support is believed to have its chief stronghold among our enemies. Education and learning are thought to be things typically German, and there is grave danger that the belief may fortify the prejudices and the temperament which were already the most formidable obstacles to educational progress in this country. Quite a distinguished publicist, writing with indignation of the Teutonic speciality which has become too malodorous to name, finishes by saying, "If these are the fruits of the Higher Learning, Heaven save us from the Higher Learning!" Against the danger here brought to light, with what weapons shall we fight? In the first place, we must combat the superstition that great ideas are chiefly born in Germany, and are spread among the other nations only by missionaries from the "Land des Denkens." To weigh up the contributions of the different peoples to our common European culture is not a very profitable exercise, but, if undertaken, it reveals a secular movement of ideas from England, France and Italy into central Europe rather than in the contrary direction. Thus, if to be great originators in the world of intellect is a chief part of a nation's glory, we and the French may both claim it in a higher degree than our foes; while if it is a rather shameful thing, as some of our prophets would suggest, then we carry a still larger burden of disgrace than they! The truth is, of course, not that the Germans are great originators except in certain departments, such as music, where they have put the whole world eternally in their debt, but that, as a people, they recognize in the highest degree the efficacy of ideas, and strive constantly, on the one hand,

to reach clear consciousness of the theoretical truths underlying the phenomena of practical life, and on the other hand, to apply those truths systematically in the rectifying and organizing of social effort.

In the next place, it should be possible to impress even the obscurantist with the practical significance of the German characteristic to which I have just referred. That significance is shown most dramatically in Germany's amazing military power—a power of which the chief source is a perfection of scientific organization unique in the history of the world. It was, however, long ago made manifest by the way in which the German had become indispensable to our industries, had captured the machinery of our commerce, and was controlling the financial life-springs of our prosperity. It is merely self-deception to attribute this humiliating state of things to our easy-going national hospitality or the supineness of our rulers. Lord Moulton unquestionably hits the mark when he attributes it solely to our intellectual apathy. It is quite certain that, if after the war the same essential conditions remain, the same results will follow. "Not all the water in the rough rude sea," no matter though our Super-dreadnoughts ride unchallenged, will prevent German influences from re-establishing themselves in British affairs if the country does not acquire by national educational effort the capacity to manage its own business. For just as, in the long run, it is not so much the gun that counts as the man behind the gun, so, in the long run, it is not so much the physical man who counts as the organized system of ideas that moves him.

But I venture to think that the situation is itself forging the weapon upon which we must chiefly rely in resisting the Powers of Darkness in our own land. Recent educational progress has been largely the correlative of the progressive emancipation of the people. They have demanded more and more insistently their share in the good things—spiritual as well as material—of our civilization, and the rapid growth of the school curriculum in interest and liberality has been the inevitable answer to their demand. The State is now repaid for extending the privileges of sonship to all its subjects by an unparalleled exhibition of filial duty. I anticipate, however, that the young men who, with clear self-consciousness, are at this time identifying their fortunes with those of the State, will expect a still further measure of sonship as the reward of their devotion. Like Ulysses, they will have seen and known many things of which our former home-keeping youths never dreamed. After their experiences—especially after electric contact with the soul of the great French nation—they will not be content to return to the old world. They will demand, if not for themselves, at least for their children, a life richer in ideas, a fuller share of our national heritage of knowledge and beauty. I do not see how that demand either should be or can be resisted, and I count upon it as the most powerful force upon our side.

Meanwhile, is it possible to indicate any preparations which the Training Colleges may make against the good time which even the

pessimists among us are bound to hope may come? Recent educational history has brought into relief two problems, both of great importance, both of the kind which the members of this Association are specially qualified to study, if not to solve. The first concerns the curriculum; the second, the relations and respective functions of individual and collective instruction. In speaking very briefly of the first problem, it would be remiss not to refer to the valuable work conducted for many years by Professor Findlay in the Fielden Demonstration Schools. But Professor Findlay would be the first to urge that the harvest demands many more labourers. We can hardly be confident that we have found the correct curriculum in the case of any single subject in the elementary school. Speaking generally, the ground covered in history and geography, in English, in mathematics and science expresses tradition, rather than a policy based upon principles clearly envisaged and confidently held. It is largely for this reason that we hear, on all hands, the cry that the curriculum is over-crowded. It is over-crowded because we have not sufficient courage to turn our backs absolutely upon tradition, and to examine the actual situation critically and without prejudice, nor sufficient professional conviction to embody the results of such critical scrutiny in working institutions. The ideas of vital importance in the departments of intellectual activity represented by the several school subjects are few and nearly always simple. They are the "knowledge of most worth," which, as Herbert Spencer rightly said, it should be a main object of the educational theorist to determine. I suggest that this problem is one to which the members of our body may devote their attention, with a certainty of reaching results of real and permanent importance.

In formulating my second main problem I have in mind a widespread contemporary movement whose significance can hardly be over-estimated. It may have expressed itself most vigorously and characteristically in Rome, but it stirs the educational waters of every civilized country. Briefly, its aim is to explore the educational value of efforts initiated by the individual, as opposed to efforts demanded of him in accordance with a predetermined routine. The successful application of the new ideas presupposes in the teacher a level of ability and training higher than the present average. I am, however, confident from my own observations that wherever there are teachers capable of using them, the new methods demonstrate their soundness by results of much greater value than those obtainable by the traditional method of class instruction. On the other hand, I feel that we need a more careful analysis of the conditions under which these good results are reached. For example, my own observations suggest that what may roughly be called the social tendencies in young children are a factor just as important under the new conditions of instruction as under the old. In fact, to describe the new methods as giving more room to the individual is to miss out half the truth. Simultaneously they give more scope for the natural working of the social factors. We need, I think,



a fuller understanding of the interplay between those two great educational forces which Mr. McDougall would describe as the social and the self-regarding instincts. But, so far as I know, the new principles have been applied in a sufficiently systematic way and with sufficiently large numbers of pupils only in the case of young children. The problem confronting us, and rapidly becoming urgent, concerns the form which the new principles are to take when applied to the instruction of children between, say, the ages of eight and fourteen. Are we to expect the gradual disappearance of the class as the inevitable unit of school organization—the class, I mean, as a collection of pupils placed together by external authority and expected to advance simultaneously in one or perhaps all the subjects of the curriculum? And, if the class disappears, by what will it be replaced? Collective teaching is, under proper conditions, so natural and so effective a means of instructing individuals of a certain age that the school can hardly dispense with some form of it. Would it be possible, and to what degree, to replace the present form by voluntary associations, the children gathering round the teacher as the children of the family gather round the well-informed father or mother? Here again, I submit, is an investigation to which members of this Association may most usefully devote their efforts.

I am conscious that while I have been indicating these pathways of investigation you have remembered a most formidable difficulty. You are asking whether it is possible for the Training Colleges under present conditions to play any such part as I am assigning to them. You are right. I have presupposed throughout that every Training College should have, as an essential part of its equipment for its task, a demonstration school properly staffed, adequately furnished and so closely identified with the College as to be a true organ of its spiritual body. A year ago the Association formally recorded its conviction that demonstration schools are indispensable instruments in the training of teachers. I am now pointing out that they are also indispensable to the performance of another function of the Training College scarcely less important to the State, namely, that of constantly enlarging the area over which educational practice is controlled by sound and well-tested theory. It would be unreasonable to expect of a Government, pre-occupied with vital questions, immediate response to the representations which have been brought before them, but I trust that the Association will not fail to renew those representations when, with the coming of happier days, they may lead to results of so much importance to our work.

## SHOULD YOUNG CHILDREN BE TAUGHT ARITHMETICAL PROPORTION?

By W. H. WINCH.

### PART IV.

#### I. The Problem of the Experiment.

IN three previous issues of this Journal I have discussed whether Arithmetical Proportion should be commenced in schools at an earlier age than is usual at present. Probably the reader may have found adequate grounds for the inferences drawn in the section entitled "Summarized Conclusions" in the December number of 1914. But more than once in the course of the experiments the following consideration was raised by some of the experienced teachers who assisted me. Is the question asked in the title, "Should Young Children be *taught* Arithmetical Proportion?" answered at all? I struggled against a negative reply. I pointed out that practice of a continuous and sequent kind, in which children are required to proceed by "steps" determined by questions which are themselves the result of a psychological analysis, is really *teaching* of a very good kind. I failed to convince, largely, I think, because I was sympathetic to the opposing view. For though teaching by practice (in routine and mechanical matters we have had during the last decade far too little of it in English Elementary Schools) is a good form of teaching, yet it cannot be denied that the word "taught" does imply an element of didactics which was missing in our experiments. Well, teachers are prone, perhaps, to over-estimate the value of direct instruction, even those who have demonstrated for themselves, by the strictest methods of experimental pedagogy, how much less an effect is produced in children by teaching than they would have thought. But if an assertion is made that one course of procedure is better than another, there is the inevitable answer from those who believe in our new science, "Let us try it and see." We must try it, of course, in conditions which really give a definite answer. This can be done by my method of equal and parallel groups. And perhaps I may be pardoned if, in using the method to solve the question raised in this experiment, I spend a little more time and space than usual in making clear what that method is. A few words as to what it is not. It does not proceed upon the assumption that any two classes of the same age and "standard" are "equal" groups. It does not assume that two groups of children of the same *general mental proficiency*, even though ascertained, not by guess-work, but by the closest experimental procedure, are equal groups for the purpose of an experiment in "school method." The groups must be formed from the results of preliminary tests carried out for that specific purpose, and bearing definitely on the issue of equality in that function or set of functions.

Nor will mere average equality suffice in the two sections. The children should be paired so that the correlation-coefficient between the results for the two groups or sections is very high; it will be well if at the outset it approximates to unity, though this is not essential to a conclusion. The difficulty is, if the two series of results, child by child, are not highly correlated, that the probable error of the difference between the means of the two groups in the final results is so great that no valid conclusion statistically is obtained at all. A recent writer<sup>1</sup> has called attention to the fact that my method of equal groups is not so simple and so easily applied as some recent experimenters have thought. I am, perhaps, to some extent culpable for lack of copiousness in explanation, but I certainly am of opinion that more than one series of experiments by "equal groups" carried out in recent years have not in reality been conducted with "equal groups," as I understand the term.

The problem, then, of this, the Sixth Series of Experiments on Arithmetical Proportion, is mainly a determination, by the method of "equal groups," of the relative values of "practice" and "teaching." It was undertaken because the teacher who wished to try it thought my way "slow"; she urged, also, that I had not really answered my own question, "Should Young Children be *taught* Arithmetical Proportion?" Further issues were involved which were not contemplated by me at the outset of the experiment.

The questions asked in the analytical steps of the practice series were based in every case on a method of unity; but it was obvious that in some of the problems a method of direct or inverse ratio gave a solution more easily than the method of unity, and the teacher urged, rightly, from the pedagogical standpoint, that if she taught at all, she was going to teach in the best way for each particular problem. It was not denied that "unity" is, on the whole, perhaps the best and most applicable method—the whole course of the experiment seemed to show that it was very good—but it was urged that for certain "proportion sums" it was not the best. So that our present problem is a little complicated: it requires the comparison of the results of the work done by "practice" whose analytical procedure *suggests* throughout the "method of unity" with those of teaching in which, for certain problems, the method of unity was abandoned. But possibly, as actual teaching goes on to-day in the best schools, the experiment will thus possess a greater practical value than it would have had if it had been confined to the more theoretical issue which I had in mind when I decided on the experiment, namely, practice (analyzed and directed practice) versus teaching (having a direct instructional element), the method of unity being used in every case. I was told that the method of unity would *not* be used in every case by a good teacher, and that it was the best teaching that I ought to compare with my method of "practice." So I must let it go at that, and proceed to the details of the experiment.

<sup>1</sup> J. Drever, in "Child Study," April, 1915.



## II. The Sixth Series of Experiments.

### i. THE CHILDREN WHO DID THE WORK.

This experiment was commenced with some sixty girls from Standards III and IV in a municipal school in a fairly good neighbourhood in south-west London. The average age of the girls was nine years eleven months. No work had ever been done by any of them in arithmetical proportion, so that both our "teaching" and "practice" methods were likely to encounter a "fair field and no favour." The whole of the work was carried out by the Head Mistress of the school, who had been one of those who raised the question as to the meaning of the word "taught." She was, of course, an experienced experimenter, with a long training in the methods of scientific pedagogy.

### ii. HOW THE TWO EQUAL GROUPS WERE OBTAINED.

The girls, as I have said, had done no previous work in arithmetical proportion, so that it was easy for us to divide them by measuring their present capacity in the very work which we were about to try to improve subsequently in two different ways.

The following was the first set of problems used :—

1. If 6 yards of ribbon cost a shilling, how much will 5 yards cost?
2. If in making 6 pies a woman uses 18 pounds of apples, how many pounds would she use in making 2 pies?
3. If 4 boys earn 4s. 4d. a day, how much will 6 boys earn?
4. If 8 women do a piece of work in 3 days, how long will it take 4 women to do it?
5. Thirty yards of rope will make 10 skipping-ropes. How many yards will it take to make 7 skipping-ropes?
6. If 7 families use 21 pints of milk, how many families will use 9 pints?
7. If you can buy 2 yards of stuff for 7d., how many yards can you buy for 1s. 2d.?
8. If 6 men drink 3 pints of tea, how many pints will 5 men drink?
9. If 4 boys eat 16 buns, how many buns will 8 boys eat?
10. If 3 horses eat a sack of oats in 6 days, how long will a sack last 9 horses?

Each problem was called out twice, and the girls wrote down the answers, and the answers only. A correct answer carried one mark. Shall we divide our girls into two equal and parallel groups on the basis of the results in this one exercise? It is usually by no means safe to do so where arithmetical functions are concerned. A really satisfactory division can hardly be obtained until the children are "steady," and steadiness seems rather difficult to get with arithmetical functions. In any case the first one or two exercises of a new activity, though quite adequate for selecting very able or very backward children, are not adequate for placing intermediate children in their

proper positions relative to one another. So we set three more sets of problems, altering words somewhat and figures also, but preserving the nature and difficulty of the sums, so that the first problem, for example, in Set 1 is properly comparable with the first problem in all the other sets; the second with the second, and so on. The results from the First and Second Test seemed "jumpy," by which I do not merely mean that the second series of results showed improvement over the first, but also that the girls moved about a good deal considered in their positional relations to one another. Stated mathematically, the coefficient of correlation between the results of the first and second tests was not very high. But the results for Tests 3 and 4 were much more satisfactory, and we decided that two parallel and equal groups might safely be formed on the results of these tests, the two last of the Preliminary Series. Some girls who would not "pair" sufficiently well, and others who had been absent, were omitted from the lists. The actual marks obtained by each girl for these tests is shown in the first and second columns of the Table subsequently given.

### iii. THE TEACHING AND TRAINING OF THE TWO GROUPS.

The Teacher who, under my direction, undertook this experiment, was of opinion that the questions at issue might be very speedily determined. She thought that three lesson periods devoted by the one group to the step-wise practice with which the reader of these articles will now be quite familiar, and by the other group to more didactic instruction, would suffice to show a clear balance of advantage on the part of the "taught" group.

For the group who learnt by practice, there were therefore three lessons. The first required the answers "More" or "Less" merely; the second involved questions modified (a reference to the preceding papers will show the nature of the modifications required) in such a way that a passage to *or* from unity was involved, but not both; the third, which dealt with complete proportion problems, involved a passage (1) to unity, (2) from unity to the final answer. The nature of all this practice work will be clear from a perusal of former papers without further specification here.

For the group which was taught didactically there were also three lessons of equal length with the practice lessons of the other group. I cannot give these lessons in full, space forbids, but experienced teachers can gather the procedure from the outlines furnished.

The first lesson began with very easy problems, such as (1) If mother has 8 nuts, and divides them among 4 children so that each has the same number, how many would each have? (2) If 4 girls have 40 thimbles, how many would each have? (3) If 1 girl has 10 thimbles, how many would 3 girls have? Oral answers were required, and were satisfactorily given. Then problems were set containing the two steps—(1) to unity, (2) from unity. But the answers were by no

means all correct. At this stage the teacher told the girls that *in sums of this kind the best way was to find out about one first, and then it was easy to find out about the number wanted.*

Several problems were dealt with, excluding, of course, those of the test series. The teacher worked the problems herself in the two steps indicated after the girls had attempted them.

In the second lesson there was a short recapitulation, and the teacher proceeded with problems in which whilst the proportion is direct, numerical estimation of the answer is easier by a method of ratio than by a method of unity. The first problem dealt with follows: Nine girls earn 12 shillings; what will 3 girls earn?

"Work the problem in the way you were taught in the last lesson," said the teacher; "first find what one girl will earn, then what three girls will earn."

The girls did so, but not very successfully; the division of twelve shillings by nine gave trouble. Then the girls were asked if they could see an easier way to work the sum. Several said they could, and further questions showed that they had argued: If 3 girls are one-third of 9 girls, a third of 12s. is required, which is 4s.

Other problems were given on the same plan. I cite one. Two pounds of plums can be bought for 5d.; how many pounds can be bought for 1s. 3d.?

The questions asked elicited the advantage of proceeding by ratio. If there are three fivepences in 1s. 3d., there will be three times 2 pounds of plums, namely 6. It is not so easy to divide 5d. by 2, and then find how many times  $2\frac{1}{2}$ d. "goes into" 1s. 3d.

In the third lesson the teacher dealt with problems involving inverse ratio. The first one proposed was: If 6 women can do a piece of work in 4 days, how long will it take 3 women to do it?

"I ask you first," said the teacher, "whether it will take 'more time' or 'less time.'" All answers were correct. "Then," proceeded the teacher, "how many days will three women take?" The correct answer was given, and the teacher asked how the answer was obtained. The answer given was "There were only half so many workers, so they would want twice the time, and twice two are four." Some half-dozen similar problems were identically treated.

Perhaps it is necessary to point out that the simplicity of the method of direct and inverse ratio has, in our examples, depended on the nature of the numerical relationships involved in the problems, and that the arithmetical problems of this work-a-day world are not thus pedagogically simplified. A method such as that of "unity," which applies easily, on the whole, to all problems, would be better. Against this it is argued that the numbers given in "mental arithmetic" are always artificially simplified, and we want the simplest method of dealing with each particular problem. To this contention it is replied



that mental arithmetic does not wholly exist for its own sake; one of its purposes is to prepare "methods" for more difficult problems which can only be solved by written calculations. I shall leave the battle drawn: it is a problem in itself for exact experimental determination. As far as this research is concerned these questions are mainly incidental: our problem is "teaching" (by any method or methods) versus "practice" (by a system suggesting "unity").

#### iv. THE CHRONOLOGY OF THE EXPERIMENT.

Four preliminary tests were given on the following dates, at the times of the ordinary arithmetical lessons for the respective standards.

1st Test, Wednesday, Aug. 26, 1914, Standard IV, at 11.15 a.m.					
"	"	"	"	"	III, at 9.50 a.m.
2nd Test, Thursday, " 27, " " " " IV, at 11.15 a.m.					
"	"	"	"	"	III, at 9.50 a.m.
3rd Test, Friday, " 28, " " " " IV, at 11.15 a.m.					
"	"	"	"	"	III, at 9.50 a.m.
4th Test, Monday, " 31, " " " " IV, at 11.15 a.m.					
"	"	"	"	"	III, at 9.50 a.m.

On the results of the 3rd and 4th preliminary tests, the girls, irrespective of standard, were divided into two equal and parallel groups, Group A and Group B. Group A was "practised"; Group B was "taught." The first exercise occupied 17 minutes, the second 16, and the third 22 minutes.<sup>1</sup>

1st Exercise, Group A. Practice lesson, Wed., Sept. 2, 1914, 9.50 a.m.					
" " B. Teaching " " " " " " 11.15 a.m.					
2nd Exercise, " A. Practice " Thurs., " 3, " 11.15 a.m.					
" " B. Teaching " " " " " " 9.50 a.m.					
3rd Exercise, " A. Practice " Fri., " 4, " 9.50 a.m.					
" " B. Teaching " " " " " " 11.15 a.m.					

The Final Tests, which are identical with the 3rd and 4th of the Preliminary Tests, were worked as follows:—

1st Test, Monday, Sept. 7, 1914, Standard IV, 11.15 a.m.					
"	"	"	"	"	III, 9.50 a.m.
2nd Test, Tuesday, " 8, " " " " IV, 11.15 a.m.					
"	"	"	"	"	III, 9.50 a.m.

No lessons in Arithmetic, other than those of the experiment, were taken during the period covered, and care was taken to avoid arithmetical or proportional references in other lessons.

#### v. RESULTS.

The necessity for successful "pairing" in the preliminary tests and absences reduced the number of girls available to 46.

<sup>1</sup> The time devoted to the "teaching" lessons depended on the length of time taken in the "practice" lessons, except for Thursday's lesson, in which the teaching came first. The time given to both "teaching" and "practice" on that day was 16 minutes, and was estimated on the basis of previous work.

TABLE VII, showing the results in the Preliminary and Final Tests of Group A and Group B, the "practised" and "taught" groups respectively.

GROUP A.							GROUP B.									
Name, initials only.	Prel. Tests.		Total		Final Tests.		Total		Name, initials only.	Prel. Tests.		Total		Final Tests.		Total
	3rd	4th			1st	2nd				3rd	4th			1st	2nd	
E.P. ...	8	9	17	Three Practice Lessons given between the Preliminary and Final Tests.	8	8	16		E.H. ...	8	9	17		8	10	18
R.B. ...	8	7	15		8	9	17		D.T. ...	8	8	16		8	8	16
M.K. ...	8	7	15		9	8	17		M.C. ...	8	6	14		6	8	14
H.K. ...	7	7	14		6	9	15		H.B. ...	7	7	14		9	10	19
R.A. ...	5	8	13		9	8	17		E.P. ...	5	8	13		10	8	18
C.M. ...	6	6	12		6	6	12		M.P. ...	6	6	12		6	8	14
M.B. ...	6	6	12		4	7	11		E.A. ...	5	6	11		6	9	15
D.R. ...	5	5	10		8	6	14		I.S. ....	5	5	10		6	7	13
E.B. ...	2	7	9		3	3	6		D.C. ...	2	7	9		10	9	19
M.P. ...	3	4	7		5	7	12		D Cl. ...	3	4	7		6	9	15
E.M. ...	3	3	6		6	5	11		A.C. ...	4	3	7		2	2	4
A.C. ...	3	3	6		4	4	8		E.N. ...	3	3	6		5	4	9
H.R. ...	4	2	6		2	2	4		W.B. ...	3	3	6		1	3	4
D.N. ...	3	2	5		5	7	12		C.S. ...	3	2	5		7	5	12
E.K. ...	1	4	5		5	4	9		E.G. ...	2	3	5		4	4	8
E.F. ...	2	2	4		1	1	2		G.A. ...	2	2	4		6	4	10
S.C. ...	3	1	4		4	4	8		K.S. ...	3	1	4		2	4	6
M.H. ...	2	1	3		6	5	11		I.C. ....	2	1	3		1	2	3
L.G. ...	1	2	3		1	1	2		I.K. ....	1	2	3		4	5	9
W.M. ...	1	1	2		4	3	7		M.P. ...	1	1	2		2	2	4
J.H. ...	1	0	1		4	1	5		L.G. ...	1	0	1		2	3	5
G.F. ...	0	0	0		1	1	2		E.N. ...	0	0	0		5	5	10
C.M. ...	0	0	0		0	1	1		G.P. ...	0	0	0		4	3	7
Averages	3.6	3.8	7.3		4.7	4.8	9.5			3.6	3.8	7.3		5.2	5.7	11.0

The groups are well balanced in the preliminary tests: the averages for the exercises and the totals for the two tests are the same, and the correlation-coefficient for the two paired series is  $+.98$ .

In the final tests (which are the 3rd and 4th preliminary tests set over again) the taught group is clearly better on the average. But is the difference sufficiently general (i.e., all along the line) to enable us to say that these girls have really gained a victory over the practised group? To determine this we must work out the "probable error" of the differences between the means. The correlation-coefficient between the finals of the A and B series is  $+.65$ ; the "p.e." of the difference between the means of the totals is  $.60$ , and the difference itself is  $1.5$ , about  $2\frac{1}{2}$  times the "probable error." We are therefore entitled with considerable confidence to assert that the taught group has gained the day.

#### vi. SUMMARIZED CONCLUSIONS.

1. Whilst it is obvious from the foregoing table that a few children have shown no improvement, either as a result of the "practice" exercises or the "teaching" lessons, yet the great majority have considerably improved, and the necessary statistical calculations show that there is a general superiority on the part of the group which received the didactic teaching.

2. The general conclusion as to the desirability of teaching proportion earlier than at present is strengthened if teaching is regarded more didactically than in my previous experiments.

## A STUDY OF CHILDREN'S VOCABULARIES. II.

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### GENERAL NOTES ON VOCABULARIES OF J., D., AND H.

THE vocabularies published in last issue of this Journal showed that J., aged fifty-four months, had a vocabulary of 1,712 words, that D., aged forty-three months, had one of 824 words, and that H., aged twenty-eight months, had one of 345 words. Under the conditions of the experiment, it is very probable that a fair number of words failed to be recorded in each case, and we are disposed to estimate the total vocabularies in question, at the particular time, at about 2,000, 960, and 400 words respectively. As regards these figures, it is necessary to guard against any suggestion that the development of any individual child's vocabulary in extent is represented by 345 or 400, 824 or 960, and 1,712 or 2,000 words, corresponding respectively to 28, 43, and 54 months of age. This would mean that a child's vocabulary increases with greater rapidity, not merely absolute, but relative, between the ages of three and a half and four and a half years than between the ages of two and a quarter and three and a half, which is not only contrary to what one should expect, but also to the results obtained by other students of vocabulary development in children. It is obvious that in the present case, dealing with three different children, we are not entitled to draw any such conclusion regarding the development of any one child's vocabulary.

It is interesting to find a difference so great between the vocabularies of J. and D., when we should apparently expect exactly the opposite result. Assuming that the opposite is the normal, we are led to inquire into possible reasons for the result we get. Personally, we are convinced that D. will not at J.'s age have attained to his vocabulary, and that the main reason for this difference between the two children is to be found in the much greater facility in articulation, which, as we have already noted, J. has possessed from the very beginning. This has undoubtedly given him a great advantage throughout in the acquiring of vocables. It is almost certain that this difference between the children is very largely, if not entirely, a difference of natural endowment. One of the earliest words used by J. was the word "gentleman," articulated almost as clearly as an adult could have articulated it. At the first few attempts he did, it is true, say "genlman," but even that shows a considerable control over the vocal organs, and the "genlman" stage lasted only for a few days.

This native facility J. improved by assiduous "glossic practice" from the sixteenth month onwards. Before going to sleep at night, and immediately he awoke in the morning, his all-absorbing "game" for several months consisted in running over all the words he knew and ringing the changes on them. It is only now that his interest in this



kind of activity is showing signs of beginning to wane. The amusing of themselves by playing with vocables has been very characteristic of all three children. At the time when the vocabularies were taken, and still some nine months later, when this is being written, D. will amuse herself for a whole afternoon by stringing together rhyming couplets. Starting often with a nursery rhyme, she continues adding line after line, sometimes making continuous sense for several lines, sometimes making some kind of sense for each line, but generally using a mixture of words and meaningless sounds, the rhyming parts belonging, most frequently, to the latter category.

From an examination of the vocabularies, the principles which guided the recording of words will be more or less obvious. Where a word was employed both as a noun and as a verb, or both as an adverb and as a preposition, but only when so employed, it is recorded twice. Words similarly spelt, but with entirely different meanings, were also recorded for each meaning. This probably affects the verbs more than the other parts of speech. On the other hand, the different parts of verbs were not, as a rule, recorded, except in the case of the verb "to be," or for some special reason. J.'s command over the parts of the verb is fairly complete, H.'s very rudimentary.

No words are recorded except those really in the child's vocabulary at the time; that is to say, those actually employed by the child. It is not at all unusual for a child to have a word at one time, and for that word to drop out of its vocabulary later. For this reason, a continuous record of a child's vocabulary, as it develops, will always contain more words than its real vocabulary at any particular time. Sometimes, it is true, words do not occur simply because no occasion to use them occurs—they are still part of the child's available stock of words; but there are other cases where the child undoubtedly forgets words it once had, especially words expressing unfamiliar objects, qualities, or processes. It is better therefore to err on the safe side, by recording only words used during the period of investigation.

The absence of "baby words" in the vocabularies has already been noted. It can hardly be questioned that the encouragement of "baby talk"—at any rate after the first month or two of speaking—really impedes the development of the child's speech. If we are right as regards the part played by facility of articulation, the reason is not far to seek. As we should expect, there are a few Scotch words, but most of the words are current English. One small group of words forms an interesting exception. These are the words made by the children themselves. D. has shown the greatest inventive genius in this way, though J. also has had a considerable number of such words at some time or other, many of which have now dropped out of his vocabulary. Such words are still represented by "police-house," "train-book," "twister," "snip," "frizzle," "champings," in J.'s vocabulary, and by "bubby," "tuppence," "tooty," "lotter," in D.'s. The meanings are, in some cases, more or less obvious, but others present a problem to the uninitiated.

"Frizzle" seems to be an original onomatopœia, and means "crackle." "Champings" is a derivative—original, we believe—from the Scotch word "champ," which means to crush or mash potatoes. J. applies it to the product he gets by crushing sandstone with a harder stone. The hard stone used in the process he called once or twice his "champion," but this word was not included, owing to some doubt as to its origin and claims. "Tuppence" is applied by D. to any sum of money larger than a penny. "Tooty" is an adjective originating, we believe, with D., and applied consistently by both J. and D. to a rough surface like the surface of a roadway with cobble stones. Where it came from we have no notion. "Bubby" is similarly a word of D.'s used for a crippled toy engine. "Lotter" is a comparative from "lot." D. is very fond of unusual comparatives. One sentence of hers we have recorded, runs: "Oh mamma, come! My dolly has fallen off the chair and been killed. If you don't come quick she'll be killéréd morer." H. has one word belonging to the same category. "Roaring" is with him a synonym for "large."

One other point requires some notice. The children have all been born and brought up in a suburban district on the north side of Edinburgh, and quite close to the seashore. A few months before the period of the investigation this environment was changed by the removal of the family to another suburban district on the opposite side of the city. They have spent two holidays at a farm in the country, and one holiday at the seaside, but J. alone was old enough to be greatly affected thereby in his vocabulary. J.'s favourite walk, while we resided at the north side of Edinburgh, was to Leith docks and pier, and the effect of these walks on his vocabulary is very obvious. He had seen ships of all kinds, including the types of warship named—the vocabularies were taken before the outbreak of the present war—shipbuilding yards, lighthouses, trawlers, and, generally, the things of the sea, to a much greater extent than the others. D. also has visited the docks, but not frequently, and H. was still too young to be taken so far. Up to the period of the investigation, J. had visited the Zoo twice, and the Royal Scottish Museum several times; D. had visited the Zoo once, but the Museum not at all; H. had visited neither. These differences represent the gradually extending environment of the child as he gets older, and, as will be seen, play an important part in the development of vocabulary.

#### THE VOCABULARY OF THE KINDERGARTEN.

The Edinburgh Provincial Committee Free Kindergarten is situated at 46 Gilmore Place, bordering upon the slum district of Fountainbridge. It is in charge of Miss Hodsman, who has throughout given every facility for the investigation, together with invaluable advice, guidance, and information. The children in the Kindergarten are drawn from the slum district, and vary in age from two and a half to over five. Some of them are slightly sub-normal mentally, and nearly all of them are underdeveloped physically. They may therefore fairly be taken as representing the lower limit for normal children, as far as the acquiring

of a vocabulary is concerned, if a vocabulary is any index of development. Our investigation is being continued, and the results so far attained are therefore more or less provisional, but it seems quite safe to hold, on the basis of what we have got, that this lower limit must be placed considerably higher than has been generally assumed in the past. From a child of thirty months the investigators obtained 101 words, from one of thirty-six months 150 words, and from one of fifty-nine months over 200 words.

The observers were instructed to employ, as far as possible, the same methods as we employed with J., D., and H. The experiment was also extended over the same number of days, though, unfortunately, these days had to be spread over about six weeks. Of course, the time actually given to the investigation was much more limited, but it normally extended to at least two hours each day.

For the sake of comparison with the complete vocabularies of J., D., and H., we have taken all the different words obtained from the children of the Kindergarten as representing the vocabulary of the Kindergarten community. This may, in the meantime, be assumed to represent approximately the vocabulary of the older children, that is children of five, coming from one of the poorest quarters of Edinburgh, handicapped in bodily development as well as in environment, and with the sole advantage of having spent some two years or so in the Kindergarten. We are, however, strongly of opinion that, when the investigation is complete, the vocabulary of such children will be found to be, in many cases, considerably more extensive. We hope further to be able to compare the vocabulary of children of two and a half, on entering the Kindergarten, with the vocabulary of the same children on leaving it at five, but, for the present, we can only deal with the results we have got.

The following 57 words, not found in the recorded vocabularies of J., D., and H., were given by the Kindergarten children :—

Nouns :—*arrow*, beard, *'beginning*, *birthday*, bogey-man, brute, bucket, clown, coach, cowboy, cradle, cuddy, *drum*, dyke, fight, fire-engine, *frock*, gee-gee, *gloves*, harness, kilties, moustache, ointment, *photo*, *pillar-box*, *present*, prize, puff-puff, row, rubber, sausage, *scout*, *screen*, shilling, stable, stag, teacher, *tea-time*, threepence, *tower*, trip, tumbler, waltz, washing-day.

Verbs :—bet, chase, *choke*, lean, *puff*, *scream*.

Adjectives :—*baby*, *curly*, furry, *second*, skinny, slidly, squint.

Of these the italicized words are all certainly in J.'s vocabulary, and some of them in D.'s, though they did not make their appearance during the period of investigation.

#### ANALYSIS OF VOCABULARIES.

In the analysis which follows, an attempt is made to institute a comparison between the various vocabularies obtained, and to indicate the differences in vocabulary due apparently to age and development, to



environment, or to both. In the Tables five vocabularies in all are represented. That of the Kindergarten children is given under K., those of J. and D. under these two letters respectively. In addition we have an analysis of two vocabularies belonging to H. These are denoted by H1 and H2 respectively. H1 is the vocabulary already given. H2 is a vocabulary taken under the same conditions six months later, in order to serve as a kind of control for some inferences as to changes due to age and development. When this second vocabulary was taken, H. was thirty-four months old. The total number of words obtained was 694, and the following do not occur in any of the previously recorded vocabularies:—

Nouns:—button-hook, *broth*, *click*, duster, *dinner-time*, *flake*, *gravy*, *gold*, *golliwog*, *garters*, *grace*, lentil-soup, muff, mealy-pudding, *malted-milk*, margarine, pole, *spoonful*, *snowball*, starch, teapot-stand, treacle.

Verbs:—clip, *click*, *dry*, *gobble*, *lay*, nip, *nibble*, polish, pop, rest, scrub, squawk, *sweep*, wobble.

Adjectives:—clever, *full*, fit, *fat*, ill, killed, *naughty*, proper, shiny, "smiley," *silly*, *sorry*, wooden.

Of these forty-nine words, which, at the later date, formed part of the vocabulary of all three children, the 21 italicized undoubtedly were in J.'s vocabulary at the period of the investigation of his words, but, like those just mentioned in the case of the Kindergarten children, did not happen to be employed during the ten days. We have thus obtained, in our two additional vocabularies, 24 nouns, 8 verbs, and 8 adjectives, which ought apparently to have been included in J.'s. The significance of this will appear presently.

Table 1 gives the analysis, into the different parts of speech, of all five vocabularies, showing number of words and percentage of total vocabulary falling under the head of noun, verb, adjective, &c., in each case. Further, a third column is added in the case of vocabularies D. and H1, giving the percentage of J.'s words under the same head. This is the case in all the tables, but, since the main object of study is the relation of vocabularies D. and H1 to J., the others being given chiefly for purposes of comparison, these three vocabularies are the only ones analysed in full detail. No attempt is made to calculate percentages for proper names for a reason already given. The numbers indicate rather the proportion of proper names to be got in the course of ten days, than the number known to the children.

TABLE I.  
GENERAL ANALYSIS OF VOCABULARIES.

	J.		D.			H1.			H2.		K.	
	Total	Per cent.	Total	Per cent.	Per cent. of J.	Total	Per cent.	Per cent. of J.	Total	Per cent.	Total	Per cent.
Nouns (Common) (Proper)	1012 56	59.1 ...	449 13	54.5 ...	44.4 ...	172 4	49.8 ...	17 ...	377 14	54.3 ...	316 20	51 ...
Verbs ...	290	16.9	162	19.6	56	80	23.2	27.6	148	21.3	114	18.4
Adjectives ...	205	11.9	102	12.4	50	44	12.8	21.4	89	12.8	71	11.4
Pronouns ...	33	1.9	28	3.4	85	11	3.2	33.3	23	3.3	29	4.7
Adverbs ...	56	3.2	36	4.7	64.3	17	4.9	30.3	43	6.2	70	11.2
Prepositions ...	27	1.6	16	1.9	59.2	8	2.3	29.6				
Conjunctions ...	16	.9	8	1	50	2	.6	12.5				
Unclassified Expressions...	17	1	10	1.2	...	7	2	...				
Total ...	1712	...	824	...	48.1	345	...	20.1	694	...	620	...

The table generally explains itself, but there are some points to which attention ought to be called. The most striking difference between one vocabulary and another is shown in the nouns. Comparing the vocabularies of H1, D., and J., we find that the greater part of the increase in number of words from H1 to D., and from D. to J., is due to the increase in the number of nouns, which show also a relative increase in each case, as the percentage column proves. Presumably the method of investigation somewhat favours the nouns, for it is very much easier to get nouns than to get, say, adverbs by systematic exploration. We may assume therefore that the pronouns, adverbs, prepositions, and conjunctions are under-estimated in all vocabularies. We should be inclined to hold the same concerning the verbs and adjectives, but for the fact that we have evidence to the contrary. Of the 40 words occurring in vocabularies K. and H2, which we have no hesitation in marking as words missed in our investigation of J.'s vocabulary, 24 are nouns, 8 verbs, and 8 adjectives. The addition of these would make practically no difference to the relative position of nouns, verbs, and adjectives in J.'s vocabulary.

Most students of the growth of language in children have asserted that the child starts with a vocabulary composed mainly of nouns. Whether this statement is true or not we shall inquire later, but, if it is, we are faced with this difficulty as regards nearly every recorded vocabulary of children, that by about two and a half the verbs occupy a much greater proportion of the vocabulary, relatively to the nouns, than in the case of the adult, and there must therefore come a time when the tendency is in the opposite direction.

The most recent extensive study of a child's vocabulary is Dr. Boyd's excellent study of his child's vocabulary<sup>1</sup> at two, three, and four years, and this is also the study which approximates most closely the one on which we are at present engaged. Dr. Boyd gives as the percentage of nouns at these years 49·2, 43·5, and 42·2 respectively, and of verbs (including auxiliary) 22·3, 22·2, and 22·2. We get for H1, D., and J. for nouns 49·8, 54·5, and 59·1 respectively, and for verbs 23·2, 19·6, and 16·9. It will be observed that the percentages for the lowest age are very similar, and it is interesting to find another investigator, Mr. W. G. Bateman,<sup>2</sup> in the case of a child identical in age with H1, giving the percentages—nouns, 50·6; verbs, 23·4.

According to Dr. Boyd's results, then, the tendency for verbs to increase relatively to nouns goes on at least to the age of four; according to ours the opposite tendency is already very pronounced at the age of three and a half. What is the cause of this difference in result? It is not the paucity of verbs in the vocabularies of D. and J., for while D. has considerably less verbs than Dr. Boyd's child at three, J. has considerably more than his child at four.

The growth of a child's vocabulary depends upon at least two main factors, mental growth on the one hand, and expansion of environment on the other. By a happy chance we are enabled to throw some light on the influence of the second factor. As we have already seen, there is an environment which has played a considerable part in J.'s life, as compared with D. and H. That is the environment of the sea and ships. What mark has it left on his vocabulary? We find that he has altogether 88 words belonging distinctively to this environment, and these are distributed—nouns, 70; verbs, 6; adjectives, 12. D. has 9 words under the same head, all nouns, and H. 5, also nouns.

Confirmatory evidence as to the influence of an expansion of environment is found when we examine vocabulary K. This represents, at any rate, as old children as J., but we may assume, at the same time, a relatively narrow environment. Accordingly we find the percentage of nouns drops to 51, where J. gives 59·1.

It must be noted also that while H. gives in the original investigation a percentage of nouns 49·8, and of verbs 23·2, six months later he gives a percentage of nouns 54·3, and of verbs 21·3. In his case also the explanation may be found in an expansion of environment, due to the removal to the south side of the city. Thus we seem to come upon what is almost a general principle in the growth of a child's vocabulary, that expansion of a child's environment always tends to increase nouns relatively to other parts of speech. Conversely, with a constant or relatively constant environment, the other parts of speech will increase relatively to the nouns.

Whether increase of verbs relatively to nouns can be taken as a symptom of mental growth, we have no evidence before us to

<sup>1</sup> "The Pedagogical Seminary," March, 1914.

<sup>2</sup> "Journal of Educational Psychology," June, 1914.



determine. Obviously, such an increase might simply be due to the environment remaining comparatively constant, as we have seen, but there might, of course, be an additional tendency in this direction due to mental growth. We cannot help, however, expressing our frank scepticism regarding any such tendency. If we were to examine this general analysis of vocabularies for genuine symptoms of mental growth and development, we should look rather to the conjunctions, and, in a less degree, the pronouns.

*(To be continued.)*

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## PHILOSOPHY AND TEACHING.

A plea for the teaching of Ethics in Training Colleges.

By H. J. W. HETHERINGTON.

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THE general purpose of this paper is to put forward the claim of Philosophy to a wider place in the curriculum of teachers in training. But while I shall try to bear in mind this larger aim throughout, I shall limit my discussion in two ways. For I am well aware that the objections to the claim of Philosophy do not spring from any failure on the part of education authorities to appreciate its importance, but from the practical difficulties of introducing it into an already over-burdened time-table. Perhaps, therefore, I shall serve my purpose best if I discuss not simply the general question which I have raised, but what, under existing conditions, may reasonably be hoped for and partially achieved. In the first place, I propose to tackle the question at its hardest—in relation to Training College students. These are, in the nature of the case, less well-trained and less mature than students who have taken University degrees. They are therefore less capable of philosophical instruction; and, since they are proceeding to elementary school teaching, it may seem as if there were less real need in their case of the severer discipline of philosophy. The advantage of discussing this problem is that it will afford a basis for formulating what seems to be the irreducible minimum of philosophical teaching, and there is plainly a valid *a fortiori* argument for the case of University students. Many of the latter, of course, take some philosophy as a degree subject, and what is required is simply the directing of their attention, at some time in their period of training, to the subjects which, as I hope to show, are most germane to their future work. On the other hand, the

second limitation of this discussion—to the teaching of Ethics—seems to make the problem easier, for Ethics has the advantage that it begins from certain questions in which most people are interested. At the same time, this limitation calls for a word of justification. There are, we may say, three main divisions of Philosophy which might profitably be taught in Training Colleges—Logic, Psychology, and Ethics. Psychology must be taught in all colleges, and my only concern with it here is to urge its extension in a certain direction. Logic, I believe, is taught in most; Ethics in few.<sup>1</sup> The choice of Logic is due to an excellent reason. Logic is the science of proof, and it is of the greatest importance that a teacher, whose first business is the training of his pupils in habits of accurate reasoning, should understand when a proposition is proved, and when it is merely rendered probable. Two of the three most obvious philosophical disciplines are therefore already taught in the majority of Training Colleges; and there is the natural query “Is not that sufficient? Why introduce a third?” I believe there are good reasons. First, as I shall argue, the claim of the third is at least as urgent as that of the other two; and, secondly, Ethics seems to furnish a better training in philosophic method than either of the others. Logic, as ordinarily taught—I am aware that I am on dangerous ground—is largely a formal science. Its main concern is with the form rather than with the content of reasoning, and it is apt to become highly artificial and abstract. When it becomes, as it must become if it is thoroughly pursued, a truly philosophical science, it is hard to distinguish from metaphysics, and I do not suppose that anyone urges the inclusion of Mr. Bradley’s “Logic,” or Mr. Bosanquet’s, among the text-books of the Training College student. Psychology, again, the indispensable foundation of pedagogy, is more of the nature of a positive science than of Philosophy. So that, although both Logic and Psychology must be retained in the curriculum, and, although both are extremely valuable propædæutics to the study of Philosophy, I should contend that some further, more definitely philosophical, study must be undertaken. Ethics, I think, provides the opportunity for that study. I believe that it is possible to show, even in a short course, what philosophical method is, and that the results of such a discussion are directly relevant to the work of the teacher.

Two main considerations have to be kept in mind: What sort of course is practicable under the circumstances in which most Training Colleges work? and what effect may be anticipated on the temper and outlook of the students? There will be no single answer to these questions, for the answer depends partly, at least, on the precise ethical doctrine which the lecturer unfolds. But if we remember that the problem before us is the training of teachers, it is likely that we shall discover a large measure of common ground in regard to certain points, which, if not strictly points of ethical theory, are yet more cogently

<sup>1</sup> For the last five years Ethics has been a compulsory subject in the Training Colleges of Scotland. The experience on which this paper is based was gained largely during the writer’s tenure of a Lectureship in Ethics under the Glasgow Provincial Committee for the Training of Teachers.

taught in connexion with that than with anything else. I shall therefore, in the first place, indicate what I take that common ground to be, and, later, proceed to suggest some topics and a method of discussion which might give the course something of the character of a philosophical training.

1. We may postulate without question that the ultimate function of education is the development of character. Now, educationists, wiser than politicians, have long since ceased asking what institution is charged with the moral training of children. It is apparent that here there can be no solution in terms of "either . . . or," and that every organization with which the child comes into contact cannot help seriously affecting his character. The school, therefore, like the family and the church, and every other group which the child knows, is a centre of moral education, and the only question which can be raised is as to the kind of training which the school can and does impart. Is there any essential discipline which the school can give which neither the home nor any other institution can give so well? This question is significant and valuable, and it is plain, right at the outset, that every teacher should be able to answer it. Of course, every teacher and every intelligent person can answer it after a fashion, but the kind of answer that ought to satisfy a teacher is hardly accessible except through some discussion of the nature of morality and of the conditions of moral influence. Without that, it is hard to see how a teacher can properly apprehend his or her relation to the pupil, or the full importance of the school in the economy of society. Some institutions get on very well without understanding themselves, and some would certainly perish if they attempted to do so. But the school surely belongs to neither of these categories. For it, emphatically, there is no living "the unexamined life." This is, in summary, the whole of the first part of my paper, and I need only indicate certain lines of thought which converge to its support.

What is the essential character of the school as a moral influence? I select only two points out of many. First, it is a *conscious* influence, exerted for the most part by a person of greater knowledge and wider experience, who has the right to compel the attention and obedience of the child to what is deemed desirable. Secondly, it is exerted not on an individual, but, mainly, on a class. In school, the child finds himself one of a number, engaged, along with others, in the pursuit of certain common purposes, and subject to a certain uniformity of occupation and discipline. In both of these respects the influence of the school differs materially from that of the home. As regards the first, the real point of contrast lies in the word "conscious." The secret of the influence of the family lies mainly in its want of self-consciousness. It is its ordinary, every-day uncritical level of thought and practice that presses so irresistibly and invasively on the child, and stamps him indelibly with the mark of the home. But the very atmosphere of the school is to make demands on the child's active attention. His business throughout the school-day



is to understand and to know, and the predominant influence is exercised by one who is aware of the effect of the teaching on the mind and character of the child. It is true that in most homes in some degree, and in many homes conspicuously, there is self-criticism on the part of the parents, and an attempt to control the influences which touch the child. It is true also that in the life of the playground there is the unconscious pressure of mind on mind, which is the reflex of the social environment out of which the children have come. But in the main, the broad contrast remains between the uncritical presentation to the child of certain moral habits and of a certain moral outlook, and the conscious and controlled attempt to train him to certain moral ideas and practices as the ruling principles of his conduct. To characterize the influence of the school in this way does not mean that in the school the child is constantly having moral precepts called to his notice. He may hear less of them than he does at home, and this analysis would still be true. It does not follow that because the influence of the school is "conscious" it is therefore "direct," i.e., that it takes the form of overt instruction in morality. All that is implied is that by whatever method the school uses its opportunity, the opportunity itself centres on the definite and definitely apprehended relation between teacher and pupil. The essence of that relation is conscious attention on the part of the pupil, and self-criticism on the part of the teacher. By that very fact there is an obligation on the teacher to make clear to himself what it is he is doing, and to understand the bearing of the various experiences which he calls the child to undergo on the central issue of all his endeavour—a sane and vigorous moral personality.

The second point, not less important, is even more obvious. In the school the child becomes one of a number; his actions are not judged, as in the home, with so great a consideration of his individual history and predispositions, but in the light of their effect on the small society of which he is one, and only one, member. It is in the school that he begins to feel the weight of that objective order to which, in later life, he will have to conform, and within which he must take his place if he is to gain those ends which men count valuable. In a sense, therefore, the school and the teacher are the media through which the moral judgment of society, and the scale of values which society embodies, reach the child in an articulate way.<sup>1</sup>

What, then, does this imply in the equipment of the teacher? This much at least, that he and she, of all people in the world, should know the bases and the ideals of character. He is charged consciously to prepare the child for the business of life, and he must know what material he has to work on, and what the business of life is. It may be said that this imputes too much responsibility, and too wide a function to the teacher. The answer is that the responsibility and the function are inevitably in the nature of the case. The teacher may misuse them, but he cannot disclaim them. It is unfortunately true that the community

<sup>1</sup> Compare on this point Professor Laurie's profound discussion in the Fourth Part (especially Lecture X) of his "Institutes of Education."

does not realize what a duty it has committed to the teacher, and how unfavourable are the conditions under which he prepares himself for its discharge. But from the duty itself there is no escape, and it is a first essential of the health of the teaching profession and of the body politic not only that the duty should be recognized, but that the teacher should be equipped for it as fully as possible. Two things in that equipment are primarily necessary, a knowledge, as I have said, of the *bases* and of the *ideals* of character. To put it perfectly concretely, the prospective teacher must receive some instruction first in the psychology of moral development, and, secondly, in the social implications of morality, or, what is the same thing, in the moral implications of society; and these two things are, in themselves, if not the whole, or even the most characteristic part of ethical science, at least fit material for its considerations.

We may take the second point first. Morality, it is true, stands in no need of a utilitarian apologetic. But there could be no more significant advance, either for the individual moral life, or for the economic and political welfare of the country, than that the citizens in general, and the teachers of youth in particular, should realize how profoundly every achievement of civilization rests on the maintenance of a definite level of social morality. The more complex society becomes, and the more specialized our various occupations, the more we depend, even for the necessities of life, on the co-operative goodwill of others. Nothing could well be more patent in these days than that the whole economic order bases itself on the moral. And when one comes to the higher achievements of civilization—the cultivation of the arts and sciences, the organization of humane sentiments, and the expansion of political intelligence and freedom—the loss occasioned by a moral failure in any part of the world-community is overwhelming. It would not be hard, and it would surely be important, to offer some teaching in the elements of moral and political theory which would exhibit this result in detail. The comprehension of this truth might carry with it an advance along two lines, which need not be sharply distinguished—the clear “intellectual” perception of what morality means to society, and the possible firming of one’s own moral resolution in the light of such an understanding. It is true that the motive and the purpose of ethical study is knowledge rather than moral improvement, “light, rather than heat.” No amount of moral science will ever transform a worthless character into a good influence. But it were less than just to the unity of human life to suppose that theoretical studies have nothing to do with practical activity. We need not commit ourselves to a paradoxical view of morality if we accept the Socratic dictum that virtue is knowledge. A teacher will neither be a poorer man nor a worse teacher if he realizes the world’s need for good citizens and his own share in their making.<sup>1</sup> And, besides this possible inspiration, it is likely that the actual teaching of certain subjects would be affected by such a training. No one

<sup>1</sup> Compare ch. iv, Part iii, of Professor MacCunn’s “The Making of Character.”

desires, of course, that children should become expert economists, or that teachers should be instructed in the mysteries of international finance. But there is something much simpler and more fundamental, of which even children may hear, and of which teachers should hear a good deal—what it means that “man is a political animal,” and what are the obligations imposed on him by his participation in the life of a civilized community. I do not believe that that can be learned without its touching such studies as geography, literature, and history. —The imaginative appeal of history, e.g., makes it, perhaps, the most effective of all lessons for the enlargement of social sympathies, and the stirring of generous emotions. Yet history can become either an unmeaning chronicle or a sentimental debauch. And if from it there are to be won that clear-eyed patriotism and that sober social honesty on which the future of civilization depends, it will matter much that those who teach it should understand the root conditions of the common life of man.

The remaining contention, that teachers should be instructed in what we have called the raw material of character, does not need extended treatment. It hardly admits of discussion, that the teacher cannot rightly interpret to his pupils the moral judgment of society, or afford them any enlightened guidance at all, unless he knows something of the beginnings of the moral life. What kind of motives appeal to a child? What punishments affect him most keenly? What impulses, instincts, and emotions belong to his earlier years? How are sentiments organized round certain objects? What is loyalty? or friendship? The mere enumeration of these questions is sufficient to establish the necessity of such training. The whole difference between wise and blundering teaching depends on the ability to formulate and to answer such questions. No Training College, of course, wholly omits the consideration of topics like these; they are important, not only for moral education, but for all educational practice. But it is worth remarking that no general course on Psychology, especially on adult perceptual and conceptual processes, is really sufficient. What is needed is a study, from the point of view of moral development, of the formative period of life.

2. It is unlikely that there will be any serious objections to what has been argued hitherto. Indeed, these two topics which I have proposed already receive a certain amount of attention in most colleges, and it will probably be readily agreed that good would come of more systematic and consolidated instruction in them. But it may be said, and rightly, that this does not prove the case for the establishment of courses in Ethics. Ethics, strictly, is quite different from the psychology of morals, and is at once harder for the student and more remote from his future work. The inclusion of this more advanced discipline, therefore, requires some further justification. Perhaps that can best be given if I try briefly to outline first the main difficulty about the teaching of Ethics, then to suggest a method of procedure which seems to obviate that difficulty, and, finally, to show that this admittedly hard course is



not remote from the work of the teacher, but that it may enable him to approach his work, not with any better technical equipment, but with an outlook that will help him to a truer understanding of its problems.

The main difficulty about the teaching of Ethics is somewhat as follows:—Ethics is a purely theoretical science of the ideal in conduct, or of the standard implied in moral judgments. We begin with the fact that there are many different actions which we recognize as good; and Ethics has to enquire "Is there any one feature or quality in all those different actions in virtue of which we recognize them as good?" It finds, of course, that, at first look, there is no such feature; that we employ many different standards in our moral judgments, and apparently pass from one to another in different circumstances without any very good reason. Hence, the first thing that ethical science has to do is to classify the various standards or ideals that we use, and see whether they are consistent with one another, or with themselves. In other words, it has to submit the ordinary moral standards, and therefore the ordinary moral motives and sanctions of men to the test of criticism. And each, as it comes before the bar of reason, proves itself unable to give any clear account of itself. Obedience to the law of GOD, or to the law of the State, or to one's own conscience, or to the duty of realizing "the greatest happiness of the greatest number," all alike reveal themselves as unsatisfactory and incomplete. Not one of them is an adequate standard by which to try our own actions and those of others.

And the trouble is that this destructive criticism is easy and convincing, and whatever positive reconstruction takes place subsequently is hard and sometimes precarious. So that, since we have to work within narrow limits of time and energy, there is every danger that the issue of our course in ethical theory will be either confusion and misunderstanding and a dogmatic appeal to authority, or a moral scepticism, a belief that all standards have been undermined, and the whole traditional and conventional moral world swept away.

Either issue for us is failure. Yet criticism is of the essence of the discipline, and we had better forego the whole course than leave it out of account. How, then, are we to present this critical study, and yet make it yield, not a scepticism, but a positive and concrete view of the moral ideal?<sup>1</sup> That we ought to be able to do so is certain, from the very fact that no genuine criticism is possible except in the light of some positive doctrine. What is clearly necessary is some general method of procedure which will enable us, through our criticism of these various ideals, to throw into relief the outline of a more satisfactory view. Each step in the negative criticism must also be a step forward; so that at every point we shall be clear, not only wherein each ideal fails, but of the truth that is embodied in it.

<sup>1</sup> It will be noted that I assume that there is one moral ideal which is capable of a satisfactory formulation. Indeed, for the purpose of illustration throughout the remainder of my paper, I, in some degree, take for granted the general validity of the point of view of the majority of the important writers on ethical subjects in this country since the rise of the British Hegelian School. I do this with less diffidence because I believe that the general method which I put forward is applicable to any other theory, and, so far as I can see, no argument in the paper is based on the assumption of the truth of any one particular theory.

It is not hard to settle on such a method. A simple restatement of the problem of Ethics will give us the touchstone which we require. That problem, we know, is to find a satisfactory and self-consistent formulation of our moral ideal. Now, if we solved our problem, we should expect the solution to take us straight to the secret of our admiration for certain actions and certain characters as the highest achievement of the moral spirit of man. We should expect to recognize that the supreme value we attach, say, to the character of Livingstone, is due to the fact that that life was the clothing of the moral ideal in flesh and blood. In other words, our definition of the moral ideal would really be the laying bare of the essential quality of those actions which our enlightened judgment recognizes as best. It would matter little whether we described our highest actions as the embodiment of the moral ideal, or the moral ideal as the soul of our highest actions. Hence, I think, we may test the claim of any formulation of the ideal to be the complete expression of it, by asking if it lets us understand the innermost nature of the good act, or if it represents the highest that man can attain. Further, this criterion would put us in a position to see just what the formulation had yielded, and what it failed to yield. We should comprehend not merely its defects, but its positive contribution to a truer theory.

An example may help this out. Let us suppose that to our original question, "What is it in an action that makes us recognize it as good?" we have framed the answer, that it is that the action is done in obedience to conscience. By this answer we have tentatively put forward the theory that "obedience to conscience" is the true definition of our moral ideal. We might test it in various ways. We might, e.g., following Professor Muirhead's analysis, exhibit the confusion in our ordinary ideas of conscience, and show that even on the most favourable statement there is always at least the possibility of conflict and self-contradiction, so that conscience cannot be regarded as the whole moral ideal.<sup>1</sup> But we may reach the same conclusion by a more direct way. Let us ask, "Is obedience to conscience the central and essential quality in those actions which we value most highly?" I think we are bound to answer that it is, and that it is not; and if we rightly discriminate these two answers, I believe we shall not seriously err in our appraising of the significance of this theory. The actions which we value most are certainly the actions of men who are faithful to the light that is in them. And yet, in the very highest type of good action, there is something that escapes this definition—a spontaneity, a freedom and a simplicity that lifts it out of the region where an appeal to conscience is necessary. It is clear therefore that "obedience to conscience" is not the full revelation of the essential character of man's finest actions; so it cannot be a full definition of his moral ideal. But its failure is not in error, but in

<sup>1</sup> "Elements of Ethics," §§ 31-35. I would not be understood to mean that the method I propose here is unknown in Professor Muirhead's argument. Section C of § 35, which is crucial in his discussion, is an admirable example of this very method. The point is that since we have to be content with a much less exhaustive analysis than his we have to select one leading principle and hold by it throughout.

defect. It is not wrong, for there can be no genuine goodness which does not at least conform to it. It is therefore a partial formulation, true and important in its own way, but incomplete, and it has taught us what further elements we must include before we reach a satisfactory theory.

An analysis of this kind, carried out in relation to several theories of the moral ideal, seems to offer the critical discipline of Philosophy, while it yet exhibits its positive and constructive attainments. There is an inevitable dialectic which carries us on at each stage to a fuller definition. And if we are careful to state each theory at its strongest, as all criticism should do, there is no danger that the course will become merely a recital of our private likes and dislikes. We shall be compelled to omit much that is worth retaining; but I think we can keep what matters most. If the examination of each theory brings us consciously nearer a more adequate statement of the one ideal which is implicit in all our partial formulations of it, this method may be the vehicle of a genuinely philosophical attempt to "see life steadily and see it whole."

Such, in briefest outline, is one way in which, I conceive, even a short course in theoretical ethics is practicable for the Training College student. There are other and, perhaps better ways, such as, e.g., a discussion centring round the idea of freedom.<sup>1</sup> But this discussion has availed its purpose sufficiently well if it has suggested that in this form, or in some other, it is possible to offer the student a course which is neither too long nor too hard, and which may give him some insight into the method and the meaning of Philosophy. One point still remains. If this is practicable, what does one hope to achieve by it? And is it worth while? The second question answers itself if we are clear about the first. And the first has already been partially answered. The gain is just the apprehension of a method of reasoning and the habituating oneself to a certain attitude of mind. I shall only briefly refer to it under three aspects.

(1) The method of Philosophy is something distinct from the method of any other discipline. It is the method of reflection, of trying to think, not without presuppositions, but without unexamined and unacknowledged presuppositions. Its importance for teachers and for all students lies mainly in this, that it inculcates a habit, vital to its own life, of turning back at every step and of trying to understand the precise significance of each advance. It is a large claim to make on behalf of any one discipline, but I think it true that nothing is so rich as Philosophy in those lessons, which are especially momentous for the teacher, of fairness, of candour, of self-scrutiny, and of "open-mindedness." For this very cause, the gains of Philosophy are hardly-won; and no one can hope that such a brief course as I have outlined will yield the full results. But it will, at least, set the student on the way, and it may encourage him to go forward.

<sup>1</sup> Such a method would have the advantage that it would elucidate many of the problems raised in our discussion of social ethics. Its great disadvantage is that it speedily raises serious metaphysical problems.



(2) The second point is that such a course provides a background to the instruction in Psychology and in Education, which form the most directly significant part of the professional training of the teacher. Education is not merely a study of school methods, or a collection of empirical rules of procedure. It is the application of a theory of life to the training of the child for life. The great educational thinkers of Europe have always been educators because they were philosophers. Conceiving some form of human life as the ideal most worthy of the powers of man, they have devised the means whereby succeeding generations might most certainly and directly set themselves towards it. Hence it seems of the utmost importance that students should be led through the free discussion of various ideals of life, and should seek to understand for themselves what a true theory of life involves. It is only in this way that any just perspective of various ideals and methods can be reached, and the confusion that comes of a multitude of counsellors be avoided. For these ideals, taken by themselves, are like the postulates of the natural sciences, only "conditional principles," and it is the business of the educator to see if they really belong to a hierarchy of principles that ascend to the Idea of the Good.

(3) The last point I should like to mention touches a larger hope, too large for any widespread realization, but carrying in itself the seeds of its own burgeoning. Philosophy is the attempt to rethink experience, and therefore to think all its aspects together. Its effort is synthetic, to bring into relation with one another the different activities of man, and to see them all as forms of his striving towards a more perfect expression of his nature. The differences between philosophies are, for the most part, differences of grouping and of emphasis, and in the main they are subordinate to this central endeavour to exhibit the unity in diversity of human life. Does it, then, practically affect the teacher that he should have some point of view from which thus to review the world? Plainly, I think, it does; and in a conspicuous way. It will help to save him from narrowness, and to interpret his duty and its possibilities more generously. For he will be in the way of reminding himself, perhaps oftener and more seriously than others, that the good at which men aim is no one-sided thing, nor easily attained, and that it demands for its fulfilment the development of every human capacity. And that he should do so is of no less moment for the society whose trustee he is than for himself. In spite of all the gains of civilization, it is still true that we have hardly begun to tap the inexhaustible resources of our spiritual wealth. There is incalculable wastage of human happiness and stifling of human potentiality, caused by nothing but our failure to open to the mass of men the knowledge of health and beauty in all its forms, and the satisfactions that are at hand, here and now, for the receptive mind. It is through the schools, and therefore through the Universities and Training Colleges, that these living waters must begin to flow. It would be idle to suppose that this tentative reform which has been discussed here will accomplish very

much. The problem is much greater than that. It is nothing else than to attract to this supreme service of the State its best minds and wills, and that involves the investment in the business of education of a far greater part of the material and intellectual wealth of the State than we have yet contemplated. But, even as things are, something is to be gained by helping even a few of our teachers to a revaluation of values. For they would, at least, see the possibilities of the future, and the way would be clear for a more resolute advance. It was the word of the wisest man of all time that "he who does not know how the beautiful and just are likewise good will be but a sorry guardian of them."<sup>1</sup> We may hope that he who, in some measure, does know the unity of the beautiful, the just, and the good, and all other ends of human life, will be in earnest in making them part of the common possessions of man.

## TRANSFER, FUNCTION, AND COMMON ELEMENTS.

### A NOTE ON TERMS.

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"THE change in the second function is in amount that due to the elements common to it and the first . . . the change is simply the necessary result upon the second function of the alteration of those of its factors which were elements of the first function, and so were altered by its training."—PROF. THORNDIKE.

"The question of transfer must always be regarded quantitatively; not its bare occurrence, but its amount is the important matter." "It is evident that the training is indeed transferred from one material to another, but only in proportion to the similarity between them. The fact is usually expressed by saying that transfer is in proportion to the amount of elements common to the training and the test."—PROF. SPEARMAN.

"The factors which chiefly make for the transfer of memorizing power are similarities of a fundamental nature, such as specific forms of attention, imagery, rhythm; in short, similarities of procedure. These will, within limits, vary for the individual mind."—DR. W. G. SLEIGHT.

Here are three statements in pedagogical theory wherein "transfer," "elements," and "function" are used as technical terms. This article offers a protest against their appropriateness by discussing their implications.

In the following paragraphs the articles from which the quotations are taken are used as the text. They are the first and latest "group" experiments of significance on the topic of Formal Training, viz., that by Messrs. Thorndike and Woodworth (*Psychological Review*, Vol. 8, pp. 247 seq., 1901), and that by Dr. W. G. Sleight (*British Journal of Psychology*, vol. 4, 1911), and the article summarizing the position, by Prof. Spearman (*Journal of Experimental Pedagogy*, March, 1914). The terms will be mentioned in the order—"elements," "transfer," "function." But it is necessary to point out here and now that by "function" Prof. Thorndike means the "mental basis" of any activity. The fuller description will be quoted later (see p. 122).

**I. Elements.**—It is not unreasonable to ask that, in some few cases at least, a thorough-going analysis of a "function" on some definite plan should be made; or of two functions that are selected as containing common elements. The first quotation at the head of this article, one would think, could only be asserted after the rigid analysis, not of one case, but of many. Strange as it may appear, there seems to be nothing approaching a careful systematic analysis of any "function" in anything that Prof. Thorndike has written on the topic. Or, if "material" is preferred to "function," as by Prof. Spearman, an exhaustive analysis of two tasks might be offered between which transfer has been effected, i.e., a list of the characters and conditions, which might properly be called elements and which would completely account for the whole situation. In an enquiry which proceeds upon very formal experimental lines, and which purports to have found an exact law, it is not asking too much that this should be done. Although this statement, that transfer is by common elements, is quoted glibly in a dozen experimental accounts, in one only is there any serious attempt to break up the experiences between which transfer is made into the elementary factors whose movements by the theory constitute the act of transfer. And even this one is incomplete, and pretends to no degree of thoroughness. But, as will appear when this analysis comes to be quoted, the theory ceases even to be a respectable description the moment critical analysis is turned upon it.

A direct attempt at definition is to be found in Thorndike.<sup>1</sup> "By identical elements are meant mental processes which have the same cell action in the brain as their *physical* correlate." We are not told how this conclusion was arrived at, and there is no advantage at this point to be gained by looking into the hopeless attempts to refute or to justify the theory of formal training by long shots from the physiology of the brain. For educational theory is not such a definition trivial and useless?

We must, then, proceed by sample. From the three articles which comprise the report of Thorndike and Woodworth the following are four references to "elements":—

(a) The identical element may be an *idea*; one function influences another by means of "an idea that may form an identical element in both functions," p. 256.

(b) A *particular habit*.—"We may form a particular habit . . . an identical element of both functions," as, e.g., "unconsciously making an addition to our first impulse," p. 256.

(c) *Habits of judgment*.—"The training might also give ideas of how most successfully to estimate habits of making the judgments in better ways, of making allowance for constant errors, of avoiding certain prejudices." "These habits might often concern features in which the function trained and the function tested were identical," p. 395.

<sup>1</sup> Thorndike—*Educational Psychology*, chap. 8.



(d) *Motor-habits*.—"Certain habits of eye-movements and stops are formed that are identical elements in both functions—trained and tested. These are identical elements; observing the letter *s* in the first, observing the letter *e* in the second, and the width of the column (of print), similar sorts of distractions, &c., in both," p. 558.

But it appears that motor-habits are not concerned in transfer; that is, transfer may occur where there is no trace of similar motor-habits in the two tasks. Coover and Angell interpreted Thorndike to mean that transfer was effected through identical motor elements. They arranged tests which should exclude all the motor elements involved in the antecedent practice. Observers were drilled in the discrimination of sounds and tested in discriminating "degrees of brightness." Transfer went on vigorously.<sup>1</sup> Further evidence on the point is forthcoming in an experiment by Prof. Judd. We come across this: "There can be no doubt that in the experiment here reported (experiments to determine the strength of the Müller-Lyer illusion) a mere change in the length of lines, or even more marked changes in obliquity of the added lines and in the position of the whole figure, were no hindrances to the effects of practice. These changes are fully as marked as many which, according to the results of Messrs. Thorndike and Woodworth, hinder the transfer of practice."<sup>2</sup>

It is by no means to be supposed that this evidence disposes of the influence of motor-habits, or of the sensational manifold which is definitely concerned in every act of transference. It only means that the act of transference cannot be accounted for in terms of motor-habits. And the like applies to every other kind of habit. We always have to posit some relation in thought that makes use of the habit, or group of habits. We have to return to this point presently. A glance at p. 256 of the Thorndike report will show that (b), "a particular habit" is cited as an example of (a), the identical element as an "idea." Together, they mean either that transfer is effected through ideas, as, for example, some particular habit; or we have a particular habit of transfer. It cannot be said that on this evidence transfer is either explained or described.

There are, however, other ideas; "ideas about aims and ideas of method and general principles" (Thorndike—*Educational Psychology*, chap. 8). But these are neither identical nor elemental. That they are not identical elements of two functions is apparent from the examples they are supposed to account for. We find Thorndike (Thorndike and Woodworth, p. 256) discussing the numerical results he has obtained from observers who had been trained to judge the size of certain plane rectangular figures, and who were then tested in judging plane figures of varying sizes. Nothing is to be made either of the figures or of any analysis of the function engaged. But he introspects himself to this

<sup>1</sup> *American Journal of Psychology*, Vol. 18, p. 330. See further, Fracker's Experiments and certain of Sleight's.

<sup>2</sup> Judd—*Psychological Review*, Vol. 9, pp. 27 seq. "Practice and its Effects on Perception of Illusion."

purpose. We think "This triangle or circle or trapezoid is about as big as such and such a rectangle, and such and such a rectangle would be 49 sq. cm." That is to say, the observer devises a method of dealing with these particular perceptions. But it is not a common element of the two functions indicated, viz., the perception of fig. A, and that of fig. B. It is very definitely a "dynamic idea," which influences the interpretation of the perception of fig. B. It is a function in itself; a relation which clothes both A and B. But no analysis of A and of B will reveal its parts, if it should have any. Why then enunciate a law of transference on account of the number of common elements? All the "elements" effective in transfer are methods of procedure which function.

We find in Dr. Sleight's thesis a much more thorough-going attempt to discriminate and name these common elements. The following is his description of the task of "practice in verse":—

"Let us now consider in detail which of the common elements have actually proved themselves most effective in the transfer of improvement. The data seems divisible into four chief classes. We have in the case of practice in verse: (a) *Data of material*, consisting of—1, logical verbal sequences; 2, poetical, and therefore unusual, inversions; 3, comprehension (often difficult); 4, rhythm; 5, rhyme; and 6, given length (from 30 to 40 lines). (b) *Data of method of presentation*—1, purely auditory; 2, the general idea given by one initial complete reading; 3, repetition line by line after the experimenter; and 4, repetition until generally known. (c) *Data of method of learning* (varying according to the individual)—1, prominently auditory or visual or motor imagery; 2, imagery of scene or action described in the poem, total or partial; 3, diffused attention; 4, the first few repetitions of a logical kind, that is, with attention to meaning; 5, nine-tenths of the repetitions primarily mechanical, chiefly rhymic; and 6, feeling tone (agreeable). (d) *Data of other conditions*—1, small group of observers in separate classrooms; 2, the work far less rigid than in the test; and (3), the testing oral, partial and occasional.

"Such an analysis cannot, of course, pretend to any degree of thoroughness."<sup>1</sup>

It will be seen at once that, whatever else the passage may be, it is not an analysis of a "function"; it is not an analysis of the mental basis of the operation of committing a passage of poetry to memory, but an enumeration of the conditions under which that operation was carried on. And yet not even this consistently. Further, we have in it an acknowledgment that all the forces that may have some influence in determining the function and its development cannot be exactly stated. A teacher who wished to gauge the effect of one kind of school exercise upon another would make such an analysis of the two exercises.

<sup>1</sup> Sleight, op. cit., p. 442.

The whole passage is a detailed description of a situation from various points of view. The factors mentioned are not elemental; no process of adding or computing can make them into the "function of learning verse." They can have no more pretensions to "exactness" than an analysis of a situation by a sound writer of fiction or of history.

We find, as a matter of fact, that Dr. Sleight has to sweep his analysis away. For the bulk of the "elements" mentioned are of no account. Anxious to refute the notion that transference is possible "equally in all directions," which no responsible person has ever asserted, and to arrive at a mathematical demonstration of transference, or of its limitations, he is constrained by the evidence not of his numerical results but of the introspections of the observers to mark the difference between the quantity of similar elements and their quality and origin. "Other similarities (i.e., other than the obvious points of similarity which may be external, in the material) such as method of procedure, imagery, special form of attention, logical organization of matter, have proved considerably more important. . . . On such a theory it is easy to understand why a great difference in the material, as for example that between 'nonsense syllables' and 'poetry' should in no way hinder transference. Such results may have the effect of disturbing many of the presuppositions of an unscientific pedagogy" (op. cit., p. 444). They have. They shatter the unscientific attempt to account for the creative impulse of the human mind by a descriptive analysis of what appears to the outsider. They refute, if there was any need for the repetition of a refutation that is already very old, the notion that we can always find and forecast the way of the mind by an *ex-parte* statement of the apparent conditions under which it has to function. They reveal the futility of the attempt to compute exactly, in the sense in which the term is used in describing physical forces, the act of transfer.

Dr. Sleight quotes at different points in his report examples of the similarities which his observers found effective; similar elements—the term is used interchangeably with common elements—which are not "external," not in the "material," but which are personal and subjective. He differentiates between "similarities of material" which by introspective evidence are ineffective, and "functional relations" or "prominent process elements" which are effective in transfer. Attention, rhythm, imagery, method of procedure, "logical organization of matter," "arbitrary associations," are examples of these relations. It may be admitted forthwith that an analysis of *practice* into such units is very proper in a pedagogical inquiry. They may be called elements of method. But they are something very different from Professor Thorndike's elements, as undoubtedly they are meant to be. By their use particular acts of transference may be described. But no juggling with them will make them fall into a piece of normative machinery that transfers them. They deserve a little more consideration. Of the number attention alone can be considered as an element of a function,



though such a description is peculiarly inadequate; yet it appears that attention in some degree and kind is a condition of every mental act involving transfer, i.e., involving more than bare assimilation. But this is not directly shown in the experiments. There is no evidence either for or against it. It is an epistemological necessity.<sup>1</sup> "Logical organization of matter" and "arbitrary associations" are descriptions of the "material" of the tasks and only by implication references to the function of the mind engaged upon the material. In this implication they are both examples of method of procedure; the one indicating that the mental operations of the observer will be directed by the meaning of the content perceived, the other that the mind is free to invent whatever mnemonic device it can in order the better to reproduce what is learnt. They are other names for, or descriptions of, knowledge as science, and knowledge as poetry; and "arbitrary associations" is a much less adequate term than "logical organization of matter." But the distinction between science and poetry is a distinction in "form." So that transfer through these "other important similarities" is a transfer of form.

We need pursue this no further, for Dr. Sleight (op. cit., p. 455) in his summary comes to the conclusion that the effective factors in transfer are "similarities of procedure," which are personal and subjective. A mnemonic device which has proved of service in one task is applied in another. Rhythm and imagery are made use of in such devices; they are pegs upon which the process of transfer seems to hang. But they are not and cannot be made into a complete account of that process. We find them developed in one task and applied in a second, and in a third. Upon the analysis of the experimenter the second has but few elements in common with the first. Yet transfer is easy and successful. The third has many elements in common with the first, according to the analysis of the experimenter. Herein transfer is apparently altogether absent. In the face of such results what meaning can be put upon a law that transfer is in proportion to the number of common elements?

If there is anything in this interpretation of both experimental accounts, the formula, "transfer is from task to task in proportion to the number of common elements," has changed to "transfer is through similarities of procedure." This is very little better than the most

<sup>1</sup>The treatment of attention is throughout the discussion on Formal Training unsatisfactory. At this point it may be noted that Dr. Sleight dismisses the introspections of his students, op. cit. p. 442, under (a) "It would seem that practice in a particular medium cultivates a particular kind of attention, which can only function under similar conditions, such as similarity of material, method of presentment, and other data. It is true that all the observers declare that their power of attention has *generally* improved, but this is completely controverted by the results."

- (a) If the observers believed that their power of attention had been improved by training, will not such belief be a factor in the situation, a new "element"? And might not this new factor, operating in different degree with each individual, account for the anomalous results? Dr. Sleight seems to take up this position: If the numerical results are what they *should* not be—rely on the introspections. If the introspections are inconveniently incongruous with the figures—begin from the figures.
- (b) If Dr. Sleight's argument that attention is entirely specific and "can only function under similar conditions" is carried far enough it will mean that where conditions are completely similar, attention will be at a maximum. But surely attention can only exist where there is some dissimilarity in the presentational field. Complete similarity means no attention but automatic response.

uncritical statement of formal training. As it stands it conditions a general power of transfer, "equally in all directions" according to the text, only in this, that your method of procedure *may be* successful in a new task. If it is successful it is persevered in; and by that act the task becomes similar in certain characters to the task wherein the observer consciously or unconsciously developed his method of procedure. But there are no longer two tasks but one, viz., the application of this procedure, which upon the prompting of an intuition the observer applies in this particular case. The root of the problem lies in the history of these sub-conscious intuitions; sub-conscious recognitions of similarity between situations. And the experiments throw no light directly, and but little incidentally, on them.

In effect, all that these experimental accounts have to say is that transference is through forms. They dispose of the notion of similar elements. They take away any meaning the phrase might have by resolving the elements into separable functions. Thorndike's statement is meaningless on the evidence it is supposed to summarize. And Sleight's amendment of it takes us back to the barest statement of formalism.

**II. Transfer** as a term in pedagogical literature was probably first used by Locke. The passage is well-worn: "I have mentioned mathematics as a way to settle in the mind a habit of reasoning closely and in train; not that I think it necessary that all men should be deep mathematicians, but that having got the way of reasoning which that study necessarily brings the mind to, they might be able *to transfer* it to other parts of knowledge as they shall have occasion."<sup>1</sup> And we find the replica of the argument in Bain elaborated with many examples. But Bain was a whole-hearted advocate of a "qualified formal training."<sup>2</sup> He pled no inherent and pre-ordained law of parsimony as Spencer did, which should make the most useful facts the training medium of the most useful faculty; but he urged as a matter of thrift that we should choose in instruction such information as will be serviceable in action and in the acquirement of further information, and that we should deal with it in such a manner as to secure whatever training value can be wrung from the forms into which it can be put. "It would be well if we could forecast the probable frequency of the use of every acquisition whatever, so that we might choose by preference those that come oftenest into play and . . . on the most important occasions." For this sagacious empiricism we are offered a law—"transference is in proportion to the number of similar elements"; counsels of prudence made suspect by the tactless energy of its friends.

Professor Adams accepts the term apparently as a fit and proper one.<sup>3</sup> But to save it from implying an atomistic and mechanical psychology, he puts the matter "that transference is always from

<sup>1</sup> Locke, "Conduct of Understanding," sec. 7.

<sup>2</sup> Bain, "Education as a Science," particularly chaps. 4 and 5, and especially p. 322.

<sup>3</sup> Adams, "Evolution of Educational Theory," p. 223.

process to process." If one may venture to expand the content of the phrase the meaning appears to be: transfer is not the transportation of single habits of any kind, or imagery, or ideas which are anoetic, from one state of consciousness to another. Rather, in all cases of transfer what is implied is that the agent has had experience involving a form or forms of noetic synthesis. These forms he applies consciously or unconsciously to the matter for thought which is new to him; to the manifold which is to be the content of the new experience. It is in the agent being able to apply these forms of synthesis, in being able to perceive and to abstract (which need not imply expression in any objective form) the relations which his mind puts upon the varying elements of presentation, that transfer consists.

Now, if transfer is by and through processes we have to eliminate from the denotation of the term all forms of habit. Automatism on any level, if they are transferred, are transferred whole; as parts, more or less distinguishable, in a wider process. The automatic activity repeating itself is not transfer. And the process of assimilation of impressions which sets the habit in motion is a process which must be distinguished from transfer.

Translating this principle to the level of pedagogic enquiry all rote memory reproductions, motor and verbal, must be ruled out of the question. Their functioning will not of themselves produce transfer.<sup>1</sup> Such, for example, are the reproduction of the results of arithmetical tables, when once they have become fixed as sheer memory habits. But each such mechanical response is the result of a long process of growth, at each stage of which transfer has been involved. Whether any such habits remain absolutely stable and irrefragable is a point of some interest in the discussion. Descriptive psychology is inclined to assume that they may; to assert that no set of varying concomitants acting as the agent of any purpose, need, ideal, or "felt want," or other interest, is strong enough to dissolve them. Pedagogical theory probably must assume that there are such psychological "elements." But on its own level, i.e., in so far as the results of analysis on the pedagogic level deal with units which are complexes of those on the psychological level, it can not do so with impunity. The assumption was freely and even rashly made by certain older theories of training; and it is this assumption which has been most unhappily translated into "transfer equally in all directions"; indifferent psychology most strangely changed into mechanico-geometry. But the two levels have a common part; there are a great number of bed-rock habits, particularly in the mechanics of expression. Pedagogical practice aims at the establishment of these in the safest and most economical way. The perceptions of the individual

<sup>1</sup>(r) From this point of view Mr. Winch's experiments—"Does improvement in numerical accuracy transfer?"—are not experiments in Formal Training as the problem is conceived by Professor Thorndike and others. They are studies in mental economy; improved facility in computation, i.e., thoroughly established automatic response, leaving mental energy free to the advantage of the "reasoning function" directed to the problems. But this is not the whole of the matter, though it appears to be as far as the teacher need go; for the two kinds of function, computation and reasoning, are usually at work together, as Mr. Winch points out.



letters, *a*'s and *e*'s, &c., of the Thorndike test, perceptive wholes long before the observers began their training in the experiment, are herein included. The synthetic function of the mind combines and recombines them; the analytic function fails to break them, or the need for breaking them never arises. The one test by which they may be known, a very negative virtue, is that *qua* elements they never involve attention.<sup>1</sup> But until that point is reached, i.e., so long as a process of learning is going on, transfer is involved. This is admitted in those experiments that arrange practice and tests in one series; where the results of the first few attempts are averaged and taken as the first test result, the majority of the attempts taken as the "practice" and the average of the last few attempts taken as the second test. It is, moreover, assumed in those experiments where a non-practised group is arranged; for by this device, it is said, practice effects may be checked and accounted for as apart from the process of transference proper.

So that transfer is always a characteristic of the creative aspect of the mind as over against the inertia of mechanical repetition. The conclusions of the bulk of the experimental accounts, properly interpreted, emphasize this. This is remarkable enough when we reflect that in pre-critical days training always carried with it the notion of drill and of sound habits of thought, will, and feeling. In the hands of the experimenters the problem is taken out of all sight of will and of feeling. And the inquiry brings itself to this pass: that it has to leave the mechanical functions of mind and action, to the results of which possibly a calculus may be applied, for the amazing reactions of creative thought. And of this it can say no more than that we have an inventive faculty: we transfer experience by forms of procedure. But this sharp distinction between invention and habit, useful and inevitable as it is in psychological theory, is merely one aspect of the distinction of content and form; and it is against pushing this distinction to extreme lengths that the polemic of the discussion on Formal Training is directed. The one serious question at issue, so far as pedagogy is concerned, is the one followed by educational theorists in the discussion before these later "laboratory" experiments began. That one has been the discussion of the factors and conditions involved in making experience *real*; in common terms immediately and ultimately useful; easily and readily remembered and applied; in finding the experience that is most worth. The work of two modern writers is sufficient to show this. Professors Adams and Dewey are

<sup>1</sup>The approximation of a function towards a set habit is a very real difficulty in the measurement of the movement of transfer. Professor Thorndike meets it ingeniously. He asks the question, regarding a particular function, "Did it improve proportionately as much?" as another function; and replies—

"This is a hard question to answer exactly, since the efficiency of 'function A' increases with great rapidity. . . . Its efficiency at the start depends upon what you take to be the start. The fact is that the first estimate of the training series is not an exercise of 'function A' at all, and that the correction influence increases up to a certain point which we cannot exactly locate."

Why is not the first estimate an exercise of "function A"? And if it is not "function A" before a certain point is reached, i.e., before it has been exercised a certain number of times, can it remain "function A" after that point?

both critics of formalism; the one exemplifying the evil by what he believes to be the vicious practices of modern—or is it no longer modern?—"humanistic" education, the other with the vagaries of "symbolic" education. And whatever may be said about the Heuristics, aggressive band, their hearts, or their instincts, are right. They think they have found the way *par excellence* of making the pupils' experience *real*. Incidentally a number of the experimental records help the interpretation of that criticism; two modest and thorough experiments by Prof. Judd, who by the way has apparently nothing in sympathy with the advanced school, are particularly helpful. But the assertion of a law of "similar elements" which are "similar processes" throws us back on the old and futile distinction between form and content, and keeps us there—a metaphysical deadlock. But as to how "method," in the widest sense of the term, affects "matter," *the* problem of the discussion, this test-tube pedagogy says little that is useful. The only escape is the compromise that "transfer is not peculiar to form,"<sup>1</sup> but that content also may be transferred; that formal training is possible but not as economical as direct training; a very equivocal position.

III. There is below this confusion some radical ambiguity. For here we have two series of experiments, neither of them, it is true, remarkable for that dispassionate and close analysis which should characterize experimental inquiry, devised to disprove the possibility of formal training. In the end, both of them leave the position unshaken. Thorndike has either to hold to a theory which in effect denies mental process, or has to acknowledge that transfer is through "forms," i.e., methods of formulating and arranging experience. Sleight affirms directly that transfer is through "forms" of experience which are methods of procedure.

We may begin the exposition of this ambiguity by reference to the word "*function*." As indicated above, Prof. Thorndike means by "function" the mental basis of any task:—"The mental basis of such things as spelling, multiplication, delicacy in discrimination of size, force of movement, marking *a*'s on a printed page, observing word *boy* on a page, quickness, morality, verbal memory, chess-playing, reasoning, &c. *Function* is used for all sorts of qualities in all sorts of performances from the narrowest to the widest, e.g., from attention to the word '*fire*' pronounced in a certain tone to attention to all sorts of things."<sup>2</sup> An interesting comment on the general vagueness that is characteristic of so much of what has been written on the topic is found in the use of the term by Thorndike's disciples. Habits function and ideals function, arithmetic functions, neatness functions, dotting i's functions. Professor Spearman, it will be noticed, avoids the word. He uses "material," and keeps his argument to the content of the tasks mentioned; that content including forms of procedure devised by the mind of the observer in performing the task under observation.

<sup>1</sup> Spearman, *Journal of Experimental Pedagogy*, 2—4 pp. (See footnote, p. 123.)

<sup>2</sup> Thorndike and Woodworth, *op. cit.*, p. 247.

The whole is viewed objectively, non-personally; just as objectively as are the phenomena of natural science, and just as objectively as we do in common sense regard any subject of instruction, when we are not teaching it. The ambiguity is here, then. Are the elements to be regarded, at the time of transfer, as elements of particular human minds; or, for the purposes of theory, may the individual consciousness in operation be disregarded? Undoubtedly, for many purposes we may look upon mental processes quite as objectively as upon the phenomena of nature. We do so continually. Possibly we may in describing and interpreting the act of transfer with which this discussion deals. With that question directly I am not now concerned. Directly it is to be pointed out that the law "transfer is in proportion to the number of common elements in the two functions," is vitiated by an initial ambiguity due to that undecided problem. Obviously if the individual mind in operation may be disregarded, one may hold to any psychological theory one pleases. The "elements" will always be concrete phases of experience, e.g., a method of presentation, a method of working, &c., and never sense elements, or single habits, or perceptions, or concepts, or any of the abstractions of formal psychology. They are never elements of a consciousness, but elements of an external world of fact. "Transfer" is assumed; and the manner of transfer is a matter of indifference for the theory. Just as obviously if this objective theory cannot be maintained, the assertion of the functioning of similar elements is no more than the old wheeze of association of similarities. And when it is assumed, as it appears to be by Prof. Spearman,<sup>1</sup> the value of it is that we may say that transfer is not peculiar to forms, but may also take place through content.<sup>2</sup>

Possibly we may extend the dispensation of this objective view to the denotation of "function," as quoted above; and, further, to the classification of similarities of procedure and of substance. But as a summary to his experiments, Thorndike enunciates a psychological theory, and makes certain direct inferences from his theory in regard to teaching. These conclusions are, as a matter of fact, rather harmless. They are what any high and dry grammarian would allow or claim.<sup>3</sup> But the theory purposes to give an account of how the *individual mind* does transfer its experience; witness the quotation at the head of this article. In the summary of conclusions to the experiments referred to, the theory may be found in all its aggressive futility:—

<sup>1</sup> Spearman, *Journal of Experimental Pedagogy*, March, 1914.

<sup>2</sup> Dr. Spearman quotes one of Fracker's experiments in support of this. TRAINING-practice in memory for the order of 4 tones (Fracker, *Psychological Review Supplement*, June, 1908, p. 79). Test-memory for order of 9 tones. The relation of test and training is said to be, same content, different method. The following is the evidence offered: "G.C.F. says that with him visual imagery is strongest. Yet he made greatest gain in 9 tones. His training imagery is auditory visual, and he thinks that most of the gain in the second test for the 9 tones is due to influence of training imagery. D.S. says that during second test he was able to transfer his imagery system directly to this list by grouping the 9 tones into 4's. . . . M.M.M. divided the 9 (tones) into numbers of 3 figures each, as 421, 343, 124. All had a different way during the first test"—and so forth.

The evidence differs in no whit from the evidence in the Sleight experiment, except that much is made of imagery. But the imagery does not transfer itself.

<sup>3</sup> Thorndike, *Principles of Teaching*, pp. 243-4. Note particularly the closing sentences of p. 243.



"The mind is, on its dynamic side, a machine for making particular reactions to particular situations. It works in great detail, adapting itself to the special data of which it has had experience. 'Attention,' for example, can only properly mean the *sum total* of a lot of particular tendencies to attend to particular sorts of data, and ability to attend can only mean the *sum total* of all the particular abilities and inabilities, each of which may have an efficiency largely irrespective of the efficiencies of the rest."<sup>1</sup>

Let there be added to this two further selections:—

- (a) "Training the mind means the development of thousands of particular independent capacities, the formation of countless particular habits, for the working of any mental capacity depends upon the concrete data with which it works."—*Principles of Teaching*, p. 248.
- (b) "The fact that the mind is so specialized into a multitude of independent capacities, that we alter human nature only in small spots," &c.—*Op. cit.*, p. 246.

The general sense of these passages, which, it appears plain, are put forward as parts of a psychological theory, is that each "function" is a unique "particular independent capacity." These "countless particular habits" do not become organized and connected. They remain particular because "they depend upon the concrete data with which they work!" But if that is so, how does transfer happen at all? And how does the data, upon which these particular habits depend, "become concrete"? And what is the data upon which they work and depend? The sense elements of experience? as Coover and Angell took Thorndike to mean, "similar motor elements"? It is rather odd to find Sleight, after all this, demurring, and very properly, that in his exposition of the experimental results, Thorndike is constantly referring to the "material," i.e., the outer, obvious appearance of the tasks. On the experimental evidence, similar motor elements are not necessary for transference. Yet the habits remain particular. How, then, does transfer come about? To go back to the text, this theory of particular habits represents the "dynamic side of the mind." But how can single habits be dynamic? If there is any meaning in words, they should stand for the static side of the mind, since presumably it has a side other than the dynamic. Single habits, if they exist, are automatic. They become dynamic only by being related with other habits, and in such relation, which relations are no less a part of experience than the habits, they continually seek to extend their range. This was apparent from Thorndike's own introspection (see p. 115). It is not the habit that transfers itself, but a method of procedure that makes use of the habit. We are not shown how that method of procedure, that form of knowledge, is dependent upon the perceptual experience it crowns and interprets. The particular habit theory denies its existence. But it has to be brought back. So in the end we have single habits and empty forms, the very truck that formalism depends upon.

<sup>1</sup> Thorndike and Woodworth, pp. 249-250.

The trouble is that Prof. Thorndike set out to vindicate the individuality of personality; the uniqueness of individual idiosyncrasy in learning. He has confused that point of view with something quite different, viz., the theory that particular states of the same individual's mind are unique. And others have blindly followed the lead. The former is sound; personality is unique. And it is this that the formalist denies, not in theory, but by practice. The second is wrong; no state of consciousness of the same individual is unique; no thinking, that is, is unique. It is this as the result of hurried thinking the experimentalists—not all—have been led to challenge. There is a definite example in Heck.<sup>1</sup> He quotes a series of extracts against formalism, in several of which this ambiguous use of the notion of "specificness" is quite apparent.<sup>2</sup> Among the number is one from Prof. Dewey's "*How we Think*," which is a repudiation of "the formal discipline idea in education." It reads: "there is no single and uniform power of thought, but a multitude of different ways in which specific things . . . evoke suggestions or ideas pertinent to the question,"<sup>3</sup> and so forth. Aptly enough it contains this passage: "A subject (of instruction)—any subject—is intellectual in the degree in which, with *any given person*, it succeeds in effecting this growth." Then, in a footnote, Heck adds rather ruefully, that another piece of work by the same author "leans a little towards formal discipline." There is nothing in the address referred to quite as definite as a passage in "*How we Think*," a very few sentences further on from where Heck stops quoting, viz., "but since problems of conduct are the deepest and most common of all the problems of life, the ways in which they are met have an influence that radiates into every other mental attitude, even those far remote from any direct or conscious moral consideration" (op. cit., p. 54). It reads very like an assertion of "transfer" in many various directions. The only explanation of Heck's remarks is that he takes Prof. Dewey to mean that each experience, each state of consciousness of each particular person, is entirely specific. It is needless to add that Prof. Dewey means no such thing. But that is where the discussion has been brought. The establishment of the proposition that all thinking<sup>4</sup> is unique—asserted by at least one American writer—would mean that training of any kind is impossible. There would be no continuity in mental process. But, as Prof. Spearman remarks, no one in his senses has ever doubted the possibility of training. The discussion has been led away by metaphors; by transfer, inappropriate and flagitious.

The only way out is to retrace our steps and take up again with the other proposition, viz., individual idiosyncrasy, the uniqueness of personality, the lack of anything like a uniformity of procedure by individuals even under, what may appear to the observer, very similar

<sup>1</sup> Heck—"Mental Discipline," p. 50.

<sup>2</sup> e.g., op. cit., p. 48—A quotation from Bolton.

<sup>3</sup> Dewey—"How we Think," pp. 45 and 46.

<sup>4</sup> There is a rather astonishing remark in Bolton: "If the dogma of formal discipline be true, why should not the feelings, the intellect and the will all be developed equally?" Why not, indeed!

conditions. It is this that the formalist would deny. Not, I think, by stated theory, but by practice. It is usual to begin a refutation of formalism by a round declaration that, since the faculty psychology is dead and disgraced, formalism must perish, too. They will probably both cease to be with the demise of the last man. Yet here we have a philosophy of habits separate and distinct and independent, which is no more than faculty writ small; those wide and useful descriptive generalities which, let us haste to add, explains so little, broken up into countless fragments. Here is the negation of training. And formalism still thrives, even in the haunts of highly-developed genetic and dynamic psychology, and among the most persistent students of child-life. Formal training is formal, not by reason of any psychological theory by means of which it may not be justified, nor by reason of the name of the subject of instruction, but by reason of the method and point of view from which the matter is taught. The criterion is always the amount of *real thinking* into which the pupil is coerced. It is the teacher that makes training formal or not formal. The highest of formalists are the neo-Herbartians, at once the devotees of the "five steps," and the guardians of a theory of apperception which, we are assured, has swept formalism into the limbo of all confusions.<sup>1</sup> It may have done so in theory, but it has left the formal practice. With these will go the academic Fröbelians, the advocates of pure heurism, and the grammarians, if any still remain. The deadliest critic of formalism is Prof. Dewey, who goes as far as any of those reputed formalists in saying that the subject of instruction is of no account if only the method is sound. What shall be said of Edward Thring, who saw only one subject of instruction, viz., language—first, English, then Latin and Greek, and who believed in grammar as a means of training? To push the mild paradox of these last two instances any further, is to say that method determines content, and that is to go over to the formalist. In short, any theory that has no other weapon than the distinction of form and content will fail to satisfy every test demanded of it. The moral is this, that we must keep our minds on "practice." *Formal practice in instruction* more accurately indicates the point at issue than this esoteric babble about the transfer of similar elements. That is to say, that what Prof. Spearman calls "piece-meal training" (Spearman, op. cit., p. 253) is very much the point to be considered in the topic of formalism. The teachers are right; the "educationists and psychologists," let us hope not all, are chasing the wrong bird. "Piece-meal training" is Dewey's "bad formalism," the formalism of which Prof. Spearman is a victim when he goes to a dictionary to look for the meaning of "formal training," and comes away having forgotten "training" and its implications. It is a pity that Prof. Spearman should have used the word; it only adds another question-begging label to the discussion.

<sup>1</sup> In an article in a recent issue of the *Manchester Guardian*, Prof. Findlay shows how intensely formal Rein's outlook and his practice have become.



IV. To hark back to the question of terms. I have tried to show that the wording of the principle under discussion is misleading and inaccurate; it is even pretentious. As a guide to practice, viz., that we should seek to make the conditions of schooling in every respect, objectively and subjectively, as near to the conditions of life as we can, it is open to criticism, for it needs so much illumination. There is no particular merit in the phrase, "transference must be regarded quantitatively." It is a description making a free use of metaphor. But in the hands of its exponents the metaphor is pushed beyond the limits of description and turned into a theory—a theory which is supposed to give a reasonable account of certain aspects of mental activity, viz., that there are certain elementary acts in conscious life, and that experience grows by an interchange of these elements upon a mechanical plan. And, further, that this process has been directly observed, and even measured in certain experiments. The experimental evidence refutes each of those claims. The whole discussion on training has become impregnated with ambiguous terms imported from mathematics, physics and chemistry—elements, proportion, equally in all directions, function and function-of, saturation, maximum (Sleight uses the two latter and offers no psychological equivalent for them), dynamic, and the rest. Objection may always be taken to the introduction into a newer science of terms that carry with them incongruous associations. The associations that go with these terms are malignant. The cumulative effect of them is deplorable. They can only be used in a discussion of human minds and their activities metaphorically. The analogies they stand for are weak and wide. One does not suggest for a moment that we can ever get rid of metaphors, even in definition. But it is proper that terms should be found that can be used securely, without the hanging fear that any principles they symbolize must be discounted on the score that they are only metaphorical. *Transfer* is of the number. It has trailing with it the notion of mechanism and change in space, a first-class objection to any term that has to do with mind, with mental process. Why not go back to *Analogy*? As a term it is convenient, without incongruous implications. There are no strait-laced Aristotelians on this point now, and our quest in educational theory and practice is, in all truth, analogies of experience.

### MOTOR INTELLECTUAL TESTS FOR MENTAL DEFECTIVES.

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IN the work of training the feeble-minded a careful preliminary examination is necessary. The difficulty lies in obtaining a reliable estimate of their mental ability so that we may proceed to classify them correctly, and thus ensure that the training given will suit each individual's needs. In cases where the mental disturbance is great, this preliminary examination, if carried out along ordinary educational lines, is often very unsatisfactory. Shy, stubborn, suspicious or unresponsive children

rarely show at their best in an oral examination. The investigator should have at his command a variety of mental tests, and should use a variety of methods. In those puzzling cases where the children are near the line dividing mental deficiency from mental dullness or backwardness, he will welcome any series of tests that will aid in determining on which side of the "border line" the children stand.

For the purposes of this preliminary examination the Binet-Simon scale of tests is most generally used. Serviceable as it is, the objections that have been advanced against it appear to tell most when it is used with the feeble-minded. It is certainly true that many of the questions run along the lines of ordinary school training, so that results are largely effected by the child's previous educational environment. It is quite conceivable that a well-trained "moron" may stand higher by the Binet-Simon scale than a normal child of the same age whose education has been almost wholly neglected.

Further, as Ayres has pointed out, many of the questions appear to test the child's ability to use words rather than to do actions. Questions of this kind favour the superficially-bright child with the ready tongue, whilst insufficient credit is gained by the stolid child, slower of thought, whose intelligence on the motor side is well developed. After all, what a person knows, or rather can express orally, is not a sufficient test of what he is. What he can do is often a far better indication of his mental worth.

As regards the arrangement of the questions in the Binet-Simon scale, it seems clear that, even in Goddard's revision—the form of tests used by the writer in this investigation—certain tests are misplaced. This makes the groups of questions for certain years relatively more or less difficult than those for other years. For Australian children, at any rate, this is true, and may be partially accounted for by differences between national school systems.

Individually, some of the tests are too mechanical, and success in them gives but little indication of "native ability." Such are the counting tests, the repetition of the days of the week and months of the year. The relation, too, between rote memory and intelligence is so ill-defined that the value of tests of this nature is minimized. Norms for rote memory at the various ages seem very hard to obtain.

But by far the most serious objection to the exclusive use of the Binet scale in the diagnosis and classification of the mentally-deficient is that it fails to test adequately those important mental capacities in which the feeble-minded are most generally deficient. These capacities appear to be prudence and forethought, mental alertness in dealing with new situations, and power of sustained attention. The mentally deficient person fails to adjust himself adequately to life's ordinary environment because he lacks foresight to anticipate, mental alertness to realize, and common prudence to deal with a situation. Sometimes, as in the case of the emotionally unstable, there is a superficial brightness that may pass for mental alertness, but in individuals of this

type common sense and prudence are conspicuously absent. Such children never stop to think of consequences. Everything is done on the spur of the moment. They look neither before nor after.

It is, of course, not in the above directions only that the feeble-minded fall short. They may be feebly gifted in rote memory, number or colour sense as well. The point is that we must not base our estimates of intelligence on these abilities alone, but must, as far as possible, endeavour to test those larger capacities which count for so much in the individual's adjustment to the complexities of daily life.

There is, then, an urgent need for a series of tests which will put to the proof the capacities of prudence, forethought, mental alertness, and power of sustained attention. Such a series should be graded for the various ages, and would then form a valuable supplement to, and partial corrective of, the Binet-Simon scale. In order that the children may display their ability in the fairest light, it should require a motor response, since the mentally-deficient, in many cases, more nearly approach normal levels on the motor side. The use of this series, along with the Binet-Simon and in conjunction with a purely motor test such as that for rate of tapping, would give us a far more reliable estimate of the child's mentality than the use of any these tests alone.

The tests described in this article are the outcome of an attempt to provide a graded series that will fulfil the conditions of peculiar suitability to defectives. Some of Fernald's and Healy's tests, as used by them in the Juvenile Courts of Chicago, run along these lines. Noteworthy is their puzzle box experiment, which certainly tests the subject's foresight and prudence, but at the same time requires a great deal of manual dexterity. These experimenters suggest the game of draughts or "checkers" as a test of foresight, and incidentally remark that "the whole possible relation of foresightedness to moral behaviour is most interesting." The same might be said of its relation to mental and moral deficiency generally. There are many other isolated "common-sense" tests, but the difficulty of standardizing these according to the various ages is obvious.

The three, four, and five year tests of the series illustrated in this article are tests, principally, of the child's ability to alternate his attention quickly and successfully from one activity to another. This ability has been taken as indicative of general mental alertness. In these tests the child's attention is divided between the effort to keep the pointer moving midway between the guide lines and the task of anticipating the changes of direction made in following the outline. With characteristic imprudence, children below the mental level of these tests devote their whole attention to one activity, with the result that they cut across the corners and round off the angles of the outline into curves. The result is that the diamond tends to become an oval, whilst in the five year tests many of the angles disappear altogether. Indeed, if the child is allowed to make its own record



with tracing paper in this test, the two lower tests may be dispensed with. We have found it practicable to make a remarkable comparison of children below and at the five year level by their success in this test alone. Failure appears to arise either because of the child's inability to look ahead and to anticipate the changes in direction, or because he has only a blurred perception of the whole shape in mass, rather than a clear-cut image of it in outline.

In the six year test the child has to make its own choice of the direction in which to move the pointer. The openings at "A" and "B" are pointed out, also the fact that the other "paths" are blocked. The pointer is then placed at the starting-point "S," and the child is instructed to find its way out by the first opening it reaches. The child below the mental level of this test either traces up and down the main path, or explores every bypath, or finds its way out through the last opening indicated.

In the tests above seven years the child is required to use prudence and mental alertness to a much greater extent. The problem is to trace through the maze without going along any blocked paths. The child must look ahead and foresee the consequences of its actions. The imprudent, unreasoning child sets to work without attempting to realize what the problem is. To him the test is merely a maze without a plan. But trial and error methods will not suffice. Sometimes success may be accidental, but, if this is suspected, the examiner should invert the test and give it again. Should a mistake be made, the child should be stopped at once, and the pointer taken back to the starting point for the second trial. At the second mistake a "fail" is registered, and the subject proceeds to the next higher test. Credit is given for the highest test passed.

Occasionally a child makes a slip, but corrects itself immediately. In such cases the error need not be counted, but the test should then be commenced again. In all cases save in the twelve and thirteen year tests, two trials are allowed in each test. In the two latter tests three trials are given. The additional trials in these tests are to compensate for a steep step as regards relative difficulty in the grading of the series.

For purposes of comparison, the records of ninety-two mentally-deficient children have been arranged in a graph. The black line indicates individual standing in mental age per the Binet tests: the dotted line shows each child's mental age per the motor intellectual series. It will be seen that the estimates of mental age by the latter tests are higher in the majority of cases than those obtained by the Binet. This difference is explained merely by the fact that the motor tests allow many children a fairer opportunity to display their intelligence. These approach more nearly to normal levels on the motor side. The puzzle element in the tests appeals to the child's interests, and he is thus induced to put forth his best efforts. Another reason is that the new series has been arranged on the basis of what a dull

normal child of each age might be expected to accomplish. On the other hand, the Binet takes as the basis of comparison the average child. For diagnostic purposes it is obviously better to compare the deficient child with the dull child who is yet not feeble-minded.

The following table gives a summary of the individual differences as resulting from the application of the two sets of tests :

TABLE I.

Differences in years between estimates as given by the two series :—

					Number of Cases.
No difference ...	...	...	...	...	23
$\frac{1}{2}$ Year ...	...	...	...	...	20
1 Year ...	...	...	...	...	26
					—69
$1\frac{1}{2}$ Years	...	...	...	...	7
2 Years	...	...	...	...	7
$2\frac{1}{2}$ Years	...	...	...	...	2
3 Years	...	...	...	...	6
$3\frac{1}{2}$ Years	...	...	...	...	1
					—23
Total	...	...	...	...	92

By reference to the above Table it will be seen that in 23 cases there is a difference of more than one year between the two estimates. If the motor intellectual series has been graded correctly, insufficient credit has been gained by these twenty-three subjects in the Binet tests for their "motor intelligence." This does not necessarily mean that the Binet estimate is wrong. Both estimates may be correct, the one indicating probable proficiency as regards general knowledge, the other probable proficiency as regards general intelligence. By the Binet we may forecast the child's probable progress in school work; by the new series its capacity for training at bench or workshop. As previously pointed out, in determining the amount of the deficiency too much reliance should not be placed on the ability to count, to memorize quickly, to arrange weight in order, &c., whilst the possession or otherwise of "common-sense" qualities is ignored. There are many "morons" who, given careful teaching, will rank high on the Binet scale. In ordinary educational work their deficiencies are not at all well marked, yet their instability of temperament, peculiar emotional condition, their general unreliability and lack of the sense of proportion and the fitness of things, enable us to place them most definitely and decidedly amongst the feeble-minded of the most dangerous kind. Many of these may be best described by the term "moral imbecile." There is no doubt that the ranks of the habitual criminal are largely recruited from this class.

The fact that, in sixty-nine cases, the two estimates are so close together is significant. Allowing for the different principles on which the tests are arranged, this correspondence is remarkable, and bears out the view that, for the majority of cases of feeble-mindedness, both series are correctly graded. It is only with "border line" subjects, with dull or backward children, and in cases where the lack of previous school training, and the other objection to the Binet cited above apply, that the differences in the estimates are most pronounced. Hence the additional value of the new series for diagnostic purposes.

Another advantage is that the motor tests may be applied where speech is defective or wanting, and ordinary methods of examination are impracticable. With deaf and dumb children the procedure should be explained by signs, or illustrated by the examiner with a test of similar design.

Finally, in applying the tests, it is most necessary that the instructions as to the manner in which they are to be given should be adhered to strictly. These instructions are appended:—

*Three Year Test.*

Illustrate by tracing round the outline with a pointer. Instruct the child not to go across the guide lines.

Two trials may be allowed. Ability to understand the instructions, and to make some attempt at tracing the outline, registers a "pass."

*Four Year Test.*

Proceed as in previous test. Greater fidelity to outline is required for a "pass."

*Five Year Test.*

If two corners are missed—the pointer running outside the guide line, a "fail" is recorded. Two trials allowed.

*Six Year Test.*

Point out the two openings, "A" and "B" (in that order); also show that all other "paths" are "blocked."

Point out the starting point "S," and instruct the child to move the pointer down the main path, and to go out by the first open side path it comes to.

If the opening at "A" is passed, or other mistake made, repeat the instructions as above. A second mistake fails.

*Seven Year Test.*

Proceed as in previous test, but simply tell the child that some "paths" are open. Do not point the openings out. He must move the pointer from "S," and find his way out through the first opening, as before.

*Eight Year Test.*

Instruct the child to find his way through the plan without going up any "blocked" paths. Tell him to look carefully ahead, and see whether the "path" is open before proceeding along it. As soon as a mistake is made, bring the child back to the starting point, and repeat instructions. The second mistake fails. In that case proceed at once to the next higher test.

*Nine and Ten Year Tests.*

Proceed as in previous test. Two trials allowed.

*Eleven Year Test.*

Tell the child he must now make his way through the openings until he finds the way out. Impress on him the need for care. No wrong turns are to be taken. Two trials allowed.

*Twelve and Thirteen Year Tests.*

Three trials in each test allowed.

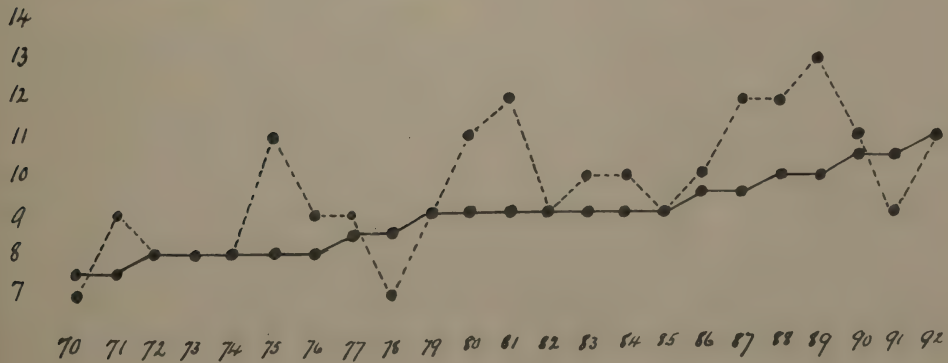
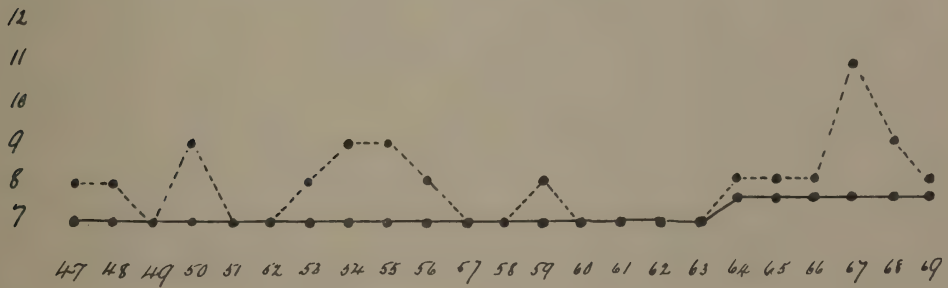
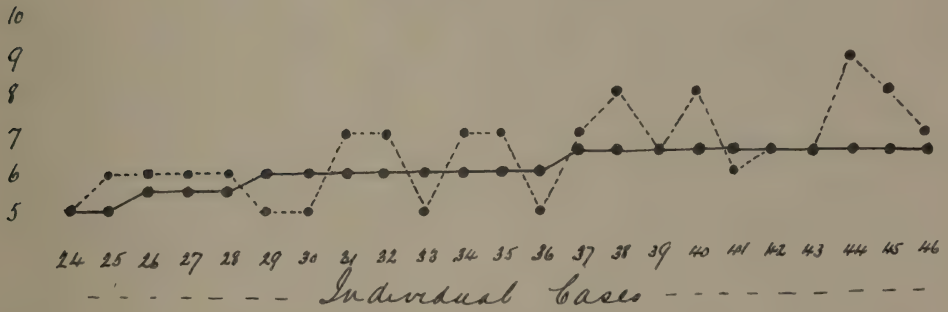
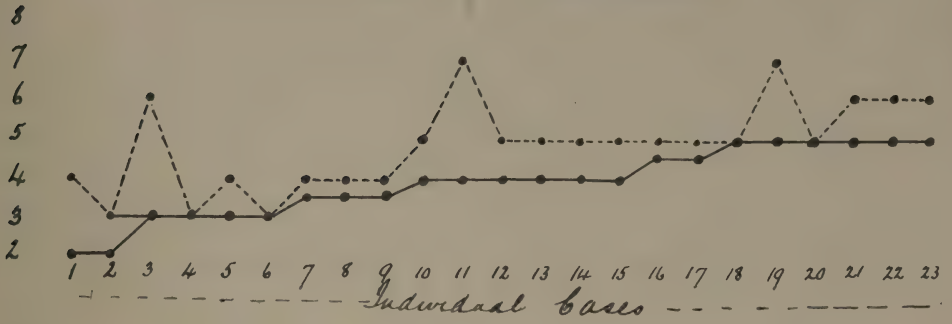
In every test above that for five years the child should not be allowed to go on through the test after making a mistake. The test should begin again.

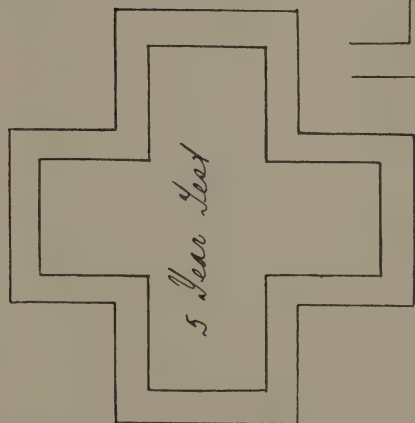
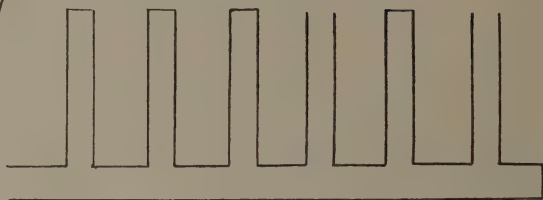
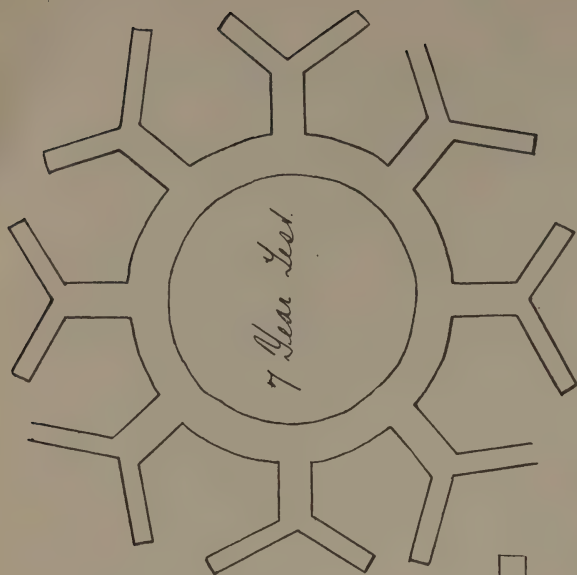
In explaining the procedure the examiner should use the simplest language possible.



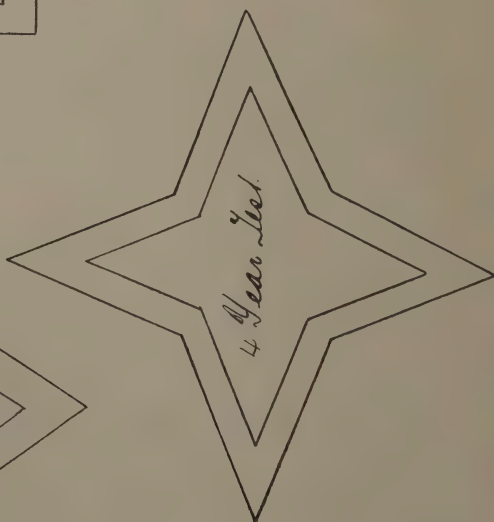
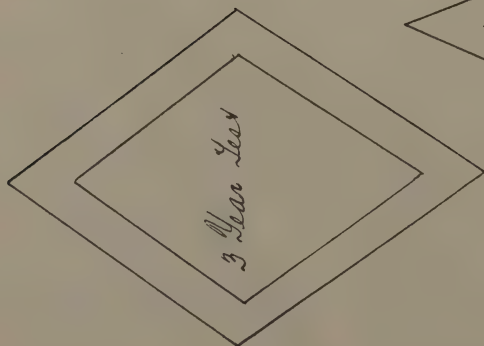
Graph showing Mental Ages of Children per Binet Scale and per Motor-Intellectual Series.

..... Dotted Line = Age per M.-I. Series.  
 ————— Black Line = Age per Binet Scale.

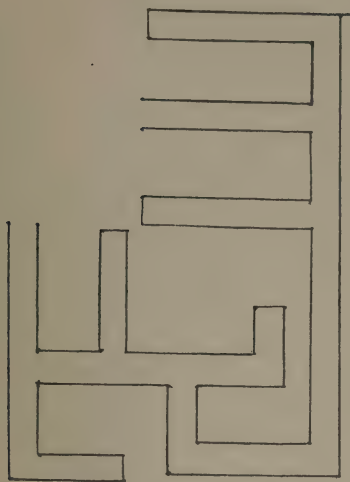




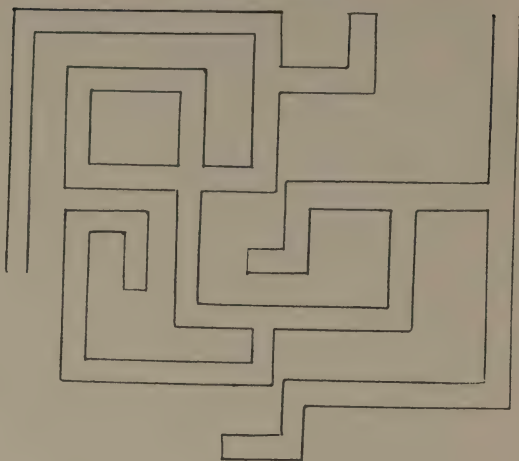
6 Year  
4 Year



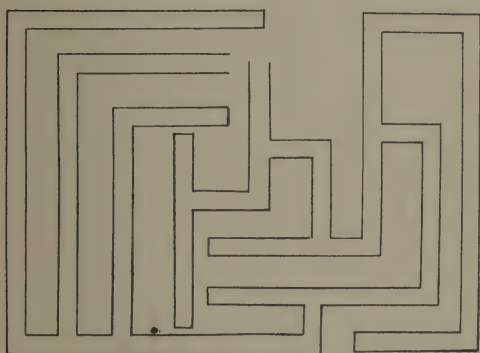
8 Year Test



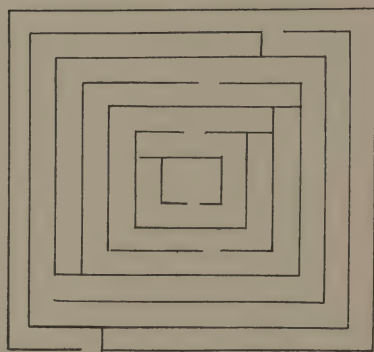
9 Year Test



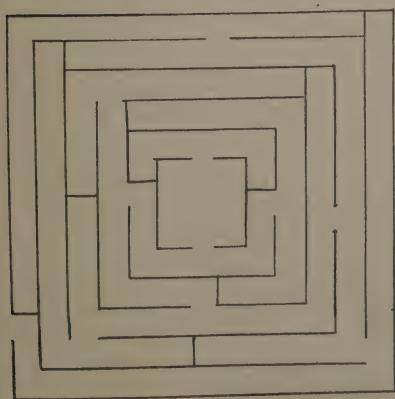
10 Year Test



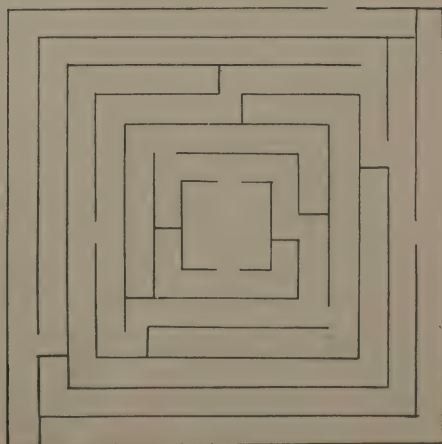
11 Year Test



12 Year Test



13 Year Test





## THE STUDY OF EDUCATION IN RUSSIA. II.

BY PROFESSOR ALEXANDER NETSCHAJEFF, PH.D.

IT was no great step from the recognition of the necessity of exact research into the nature of the pupil to the recognition of the importance of adapting the methods of experimental psychology to the investigation of pedagogical problems—methods which had already obtained wide acceptance in psychology itself.

In 1901 the first laboratory of experimental psychology in Russia was opened. It was housed in the pedagogical museum of the educational institutions of the Ministry of War, and its organization was entrusted to myself. Intended at first for purely educational purposes—practical exercises in psychology for the teachers and pupils of the Cadet Corps<sup>1</sup>—it gradually became the centre of an intimate circle of persons who not only undertook the labour of working out new methods of experimental investigation, but also of disseminating such pedagogical knowledge as we already have. In 1904 they organized special paedological courses of instruction, which, in 1907, were transformed into the Pedagogical Academy with a two years curriculum for persons who had already completed University (or similar) courses. Later, in 1908, from the same group of people, the Society of Experimental Pedagogy sprang into existence. Four-year advanced courses in experimental pedagogy were organized, and a mixed secondary school for the express purpose of experimental inquiry was established. In addition to this foundation, which became the centre of organized research and of pedagogical propaganda, Professor Bechteref founded the Psycho-neurological Institute in Petrograd (1908), and in Moscow Professor Rossolimo founded the Institute of Child Psychology and Neurology (1912)—both were set up for the same end: “the study of man as the object of education.” Amongst other methods for the advancement of paedological knowledge, short courses in the new development of the subject have been held in various parts of Russia, and periodical conferences have met in Petrograd. Interested people came from all parts of Russia to these gatherings, which were organized in 1906, 1908, 1910 and 1913. It was our desire to make schoolmasters more closely acquainted with the methods of experimental pedagogical research, and at the same time to make it possible to teach psychology as an experimental science in the secondary schools. We had, therefore, to provide apparatus as well as train teachers. To this end our laboratory prepared a collection of inexpensive psychological apparatus. Thanks to this, we have been successful in organizing small psychological cabinets in more than a hundred schools, or in connexion with pedagogical societies.

I shall now try briefly to describe the methods and problems with which we have been concerned in our experimental investigations.

<sup>1</sup> The Ministry of War in Russia provides and directs free schools for the children of all the officers of the Army. The boys in these schools are called cadets.

The greater part of our effort during the last fifteen years has been directed to the explanation of the changes in the mental life of boys and girls as they grow older. This investigation brought us face to face with two fundamental pedagogical problems—the problem of the general scheme of education and the problem of co-education.

Our general plan was to require children of different ages, placed as far as possible under the same external conditions, to work similar exercises of greater or less complexity. The psychical peculiarities of age and sex must be revealed in the analysis of the results thus obtained.

Thus, for the investigation of memory, we required them to receive in silence a series of impressions (twelve in all), following one another at intervals of five seconds, and straightway to reproduce them from memory. Special series of visual and auditory impressions were given (objects of different colour and of difficult form, pictures, inarticulate sounds, the tinkle of a bell, the clink of a glass, a whistle, the ping of a feeble shot, and so on, numbers, words of different meaning). During the investigation of some hundreds of children, it came out that the capacity for the immediate reproduction of impressions increased with age, but that, at the first signs of adolescence, memory capacity slightly diminished. Words of different significance were not remembered with similar ease at different ages, and a specially noteworthy phenomenon was the marked increase which showed itself in the first stages of adolescence, of the power to reproduce series of words having an emotional meaning.

Alongside investigation into memory process it is convenient to conduct inquiries into the processes of association. Usually such experiments were arranged on the following lines:—Some word or other was spoken to the pupils and they were required to write down at once the first other word which came into their minds. For these starting points of association, words of different meaning were taken which might perhaps excite the imagination of the children in different directions. The following will serve as examples: words relating to natural objects (woods, flowers, sea), the family (father, brother, mother), religion (church, prayer, GOD), ethics (goodness, honesty, untruth), æsthetics (music, theatre, pictures), the less well-defined field of the emotions (pleasant, disagreeable, terrible). These observations of the characteristic features of so-called “chance associations,” from my point of view, give much interesting material for the understanding of the psychology of school age. The reactions of boys of 15-16 and girls of 13-14 showed that the attention of pupils of this age is especially directed to purely organic sensations, and that the intellectual processes at that period are somewhat less active. Thus, boys of 13-14<sup>1</sup> reacting to the word “pleasure” particularly often respond with “snow” or “dinner,” and scarcely ever with a word connected with their studies.

<sup>1</sup>In Petrograd, adolescence begins—for boys, at 13-14; for girls, at 11-12.

If we compare the character of the representations involuntarily running in the minds of the pupils of this age in response to the same word, with those which arise in the minds of another age under like circumstances, one notices that children of the aforementioned ages are more inclined to conform to one type than the other because of the relative frequency of erotic representations. But, happily, there is still one field of spiritual life in which the assimilative capacity of children of this age is more intense, viz., the one concerned with the impressions received from communion with nature.

During the next two years, that is to say, the second half of the first four years of adolescence, we observed an increase of memory power in dealing with words of æsthetic, ethical or scientific interest, revealing, as it were, the beautiful spectacle of the youthful mind blossoming in all its pomp and glory.

The results of our inquiries into these "chance associations" confirm many of our other observations in the development of the minds of children of school age, e.g., in the examinations of children relative to the books they love, the analysis of the subject matter of books done by pupils of different ages and of both sexes.<sup>1</sup>

The analysis of their judgments in respect of the moral value of children's behaviour as related to them was also undertaken. At the time when their responses in the association experiments showed greatest inclination to assume a purely external character, we also noticed in the working of their minds a predominance of the purely external and descriptive over the lyrical and reflective. This is revealed in their favourite books—it is the external story which takes the central place. Moral ideals preferably define themselves in the form of external personalities from their own intimate circle. In the valuation of the moral worth of other people's conduct, chief attention is not given to the inner motives which prompted it, but to the external results. Thus, in passing judgment on certain conduct, children of this age are usually disposed to express themselves more rapidly on the necessity of external punishment than on its moral effects. In the second period of this age of transition, when an increase in the quantity of internal associations is noticed bearing evidence of the increase of attention directed to their own mental experiences, special preference for books of a romantic or moral type is observed; in their compositions the children show great inclination to argument and to the description of feelings; moral ideals acquire a more abstract and elevated character, and, in the estimation of the conduct of others, attention is chiefly directed to the operating motive; thus, in pronouncing a man guilty, children of this age more quickly recognize that it is better in his case to take into account only moral considerations.

A comparison of the results of our experiments on the associations simultaneously produced in children from co-educational schools with

<sup>1</sup> We arranged also to bring the same questions before them at the same moment by means of questionnaires, e.g., Who do you think was the greatest man? Why? Who was the happiest? Why? Who do you think was the best man? Why? Which would you like to resemble? Which would you like to have been (or to be)?



children from other schools—the schools being in other respects of similar type—brought out the favourable influence of co-education on the general direction of the imagination of the pupils. The associations of girls from mixed schools do not show that extreme emotional character which is commonly observed in the pupils from girls' schools. Here is something clearly due to the suggestive influence of the boys. It is particularly noticeable in the first period of this transitional age, when children appear to be specially accessible to the healthy influences about them. As the period of adolescence begins earlier with girls than boys, so in being subject to the influence of contemporaries who have not yet entered upon this period, the girls in a co-educational school preserve the general direction of imagination natural to children, and do not show that sharp tendency to concentrate their attention on organic sensations and ill-defined emotions which is noticeable so early in the adolescence period of pupils in girls' schools. Similarly, the study of these associations in boys shows the favourable influence on co-education in the purity of their imagination and in the calmer flow of the initial period of adolescence.

(To be continued.)

## REVIEWS.

**The Schools of Medieval England.** By A. F. Leach. pp. xv + 349. Methuen. 7/6 net.

FOR more than twenty years Mr. Leach has been making accessible to the student of the history of education in England material which would otherwise have remained out of his reach, buried in the various limbos of original documents. His industry has been great, and its fruits are of the first importance. But they have hitherto been largely entombed in articles in magazines or in the volumes of the *Victoria County History*—a work so costly as to be out of the reach of all who have not access to a well-endowed library. A suggestion made to the publishers some years ago to issue separately the articles on schools was, unhappily for students, judged impracticable. Mr. Leach has, it is true, given the world much valuable matter in his *Educational Charters and Documents*, and has done good service in overthrowing the Edwardian scholastic idol in his *English Schools at the Reformation*, but in general the evidence he has gathered has remained out of the reach of many who would gladly have studied it. There is, then, abundant justification for this book, even though it contains little that its learned author has not given us before. Were a further justification needed, it could be found in the fact that the evidence already furnished has failed in breaking away the crust of prejudice from some writers, so that the old fables re-appear in even the newest and most generally reputable books. But Mr. Leach is not one of those who suffer critics gladly, and he has a peculiarly trenchant style of dealing faithfully with them. In the great majority of cases he substantiates his own position, but even then we think the refutation would have been equally effective if more impersonally expressed. Mr. Leach is not, it would appear, a specialist in the history of theological dogma, and in that connexion some of his statements would not be generally accepted. But we have no wish to see them dealt with according to the pattern of controversy set in this book.

These are, however, but minor points. The essence of the book is the mass of evidence it advances that pre-Reformation England was well supplied with efficient schools, and that they were well attended. The evidence, indeed, has a somewhat overwhelming effect. The reader feels at times as if he cannot see the wood for the trees, and he wishes the author had generalized and systematized his

results more, as, for example, he did in *English Schools at the Reformation*. Yet generalizations there are, though, perhaps, they have somewhat to be sought.

Dr. Leach begins with a brief sketch of Greek and Roman schools, dwelling, as is right, mainly on the schools of the Roman Empire. Indeed, what he says about Greek schools occupies less than a page, and is presumably intended only to lead on to the account of the Hellenized school training of Rome. We then have four chapters dealing with schools in England before the Norman Conquest. The traditional legend of our childhood that the Normans introduced culture and learning into a barbarian England is shown to be as truly an invention of the supplanters as the tradition of medieval ignorance was of the men of the Renaissance. Indeed, we are assured: "The main difference caused by the Conquest was the substitution of Norman for English schoolmasters and the translation by the schoolboys of Latin no longer into English but into Norman-French" (p. 103), a custom to which Higden's *Polychronicon*, written in 1327, traced the corruption of English. In pre-Conquest times both schools and school-books were common. The Council of Clovesho, in A.D. 747, postulates an adequate supply of schools, and whatever its effect, it is at least interesting "as showing that there were sufficient schools to demand legislation" (p. 56). As to school-books, we have a very interesting account of those of Ælfric (pp. 85-91), and it is ingeniously and legitimately deduced from the *Colloquy* that boys of all classes attended the schools. Those who have hitherto believed that the *Orbis Pictus* of Comenius was the first illustrated school-book will be interested in the reproduction of a page from an Anglo-Saxon school-book which faces p. 62—one of some forty charming illustrations.

In post-Conquest, as in pre-Conquest, times, a grammar school was an integral and important part of the establishment at every Cathedral and Collegiate Church, and was, as a rule, distinct from the song-school of the choristers, and superior to it in rank. But these were by no means the only schools. "On the contrary, in every town of considerable population, there was a demand for, and consequently a supply of, schools" (p. 115). Of the various origins of many of these schools, Mr. Leach gives us particulars. But the evidence is necessarily cumulative, and does not admit of summary.

Mr. Leach has an active dislike for monasticism, which leads him to make statements he would find it difficult to justify, as, for example, that the whole duty of a "choir-monk" was "to sing psalms, read the lessons, and say long prayers, all by heart, seven times a day" (pp. 100, 229). Apparently he holds that the Dark Ages were due to monasticism (p. 23), and that learning owed no debt to the religious orders. So we hear nothing of culture inside the cloister, nor of the students sent by monasteries to universities. All Mr. Leach really aims at establishing is that education in the middle ages was not usually given through monastic schools—that is, schools attached to the monasteries and taught by monks. That many schools were supported and controlled by monasteries he grants, but he believes that the tradition that monks were the schoolmasters of the middle ages arose from the fact that the larger monasteries, at any rate, supported Almonry Schools, primarily for their boy choristers. In considering this question it surely should be borne in mind that, as Mabillon pointed out, monasteries were not established as schools or public academies, and that monks, even when priests, had no cure of souls. That many monks were learned men there is abundant evidence to show: that it was the duty of a monk to be proficient in secular learning is an indefensible error, of which we are sure Mr. Leach is incapable, though the tone of some of his remarks suggests it.

The difficulty of tracing the full history of a school is often brought out. It has always to be borne in mind that neither the date at which a school is first mentioned, nor that at which it received an endowment, is, of necessity, the date of its foundation. Indeed the earliest beginnings of our oldest schools must be inferred from the general constitution of the ecclesiastical corporations of which they formed a part, and this is often subsequently confirmed by a reference to it—incidental, it may be—in some legal document as already established. It is amazing, nevertheless, what a great deal Mr. Leach has brought to light.

Though the universities lie outside the scope of Mr. Leach's book, some reference to these was unavoidable; and we have a sketch of the origin of Oxford and Cambridge and of the abortive universities at Salisbury and Northampton. Of the foundation of the former two different dates are inadvertently given (pp. 158, 165). Neither university, however, lasted many years.

Mr. Leach has a high opinion of the attainments of the medieval schoolboy. "If we could call up some of those medieval schoolboys, of whom our historians of education in their ignorance have spoken so disrespectfully, we should find that if it came to a Latin conversation, they would put our best scholars to shame with the readiness of their discourse and the copiousness of their vocabulary" (p. 88). Nor does he accept the "dog-Latin" charge of the men of the Renaissance. Medieval Latin was different from that of Virgil and Cicero, just as the English of to-day is different from that of Shakespeare or Chaucer. But for the purposes of actual life—for conversation and current literature—"the Latin of Prudentius and Augustine, or even of Duns Scotus, was as good or better than the Latin of Horace or Cicero" (p. 248). Mr. Leach shows that "the very term Renaissance is misleading. There was no new birth of learning wanted, because learning had never died—in schools at all events" (p. 248). Indeed "the medieval grammar school differed not at all in subject or method from the Renaissance school . . . except that boys translated their Latin not into English but French" (p. 181). This is, probably, put too absolutely, as Mr. Leach has himself told us that Logic and Rhetoric had been introduced and that "the humanists made a dead set at dialectic in the schools" (p. 270). He also believes the substitution of the minutiae of grammar for logic to have been a mistake. "The art of argument has more bearing on human life than the minutiae of the use of enclitics in a twice dead language" (p. 271). We cordially agree.

Mr. Leach is undoubtedly right in finding the essence of the new movement in its spirit rather than in the subjects it taught. It transferred the centre of men's interests from GOD to man. The happiest change it made in schools, and that not everywhere or immediately, was care for physical exercise and training.

Mr. Leach brings his story up to the end of the reign of Henry VIII, and reserves for "a subsequent volume" the happenings of the reign of Edward VI. He seems to have modified the unfavourable view of Henry's dealings with schools which he expressed twenty years ago. For example, he then told us that at Warwick the Guild sold lands and bought back the Parish Church and Grammar School from the Crown, and he printed the deed in question. In 1906, in the *History of Warwick School*, he said "it seems impossible to ascertain exactly what means were employed to get the grant from Henry VIII" (p. 103). Now we read simply that "the bulk of the endowments were granted to the inhabitants" (p. 318). We tremble to think how Mr. Leach would have commented upon such apparent inconsistencies.

The reader would have been glad to be told more about what went on in the schools—what books were used, how the masters taught, and generally the conditions under which our medieval ancestors were educated. It may be that adequate records are wanting, as seems to be hinted on p. 300. But that is what we particularly want to know. Schools were many, and the struggles against the local monopoly of cathedral schools show that to keep a school was a coveted privilege. Schools were, therefore, valued; that is, they must have been thought valuable instruments for fitting boys for life. What we desiderate is a philosophical treatment of the subject so as to show what social need the schools supplied and how they supplied it. In a word, what function did they fulfil in the community? To such questions this book returns us no full and clear answer.

However, we are grateful to Mr. Leach for what he has given us, and we sincerely hope that the promised volume will not be long delayed. It goes without saying that the book is absolutely indispensable to all serious students of the history of education, and it may be affirmed with confidence that the cultivated general reader, who is not specially interested in schools and their history, will find in it much to delight and enlighten.

J. WELTON.



**The Teaching of Geography.** By B. C. Wallis. (viii+221 pp.) Cambridge University Press. Net, 3/6.

**The Surface of the Earth—Elementary Physical and Economic Geography.** By Herbert Pickles. (xii+170 pp.) Cambridge University Press. 2/-.

MR. WALLIS'S school books on geography are well known to teachers. In the present volume the author endeavours to give practical guidance to others by presenting the fruits of his own experience as a geography teacher. At the same time he claims to propound "an ideal scheme which serves as a criterion by which to judge, first, the advisability of the proposed course of lessons for next term, and, secondarily, the value of the lessons given last term."

It may be said at once that the book contains much sound matter and bears the impress of an enthusiast and a first-rate teacher, but, having said this, it must be confessed that the book is disappointing. It would have been more valuable had it been half the size and had the author confined himself to practical matters and avoided discursions into the philosophy of his subject. What is to be thought, for example, of a book that begins by saying that "the science of geography deals with the sum total of human effort in relation to the environment in which human life is passed," and that "school geography includes as complete a treatment of the science as opportunity and the limits of time permit"; that looks forward to the time when "the effect of geographical environment upon religious and philosophic thought" will be taught in schools; that tells us that the story of geography is the story of "the progress of the average man, who, in face of difficulties set before him, by nature, by governments, by the errors of his fellow-men, has attained to the present stage of the world conquest"; that would have us believe that the "geographical outlook" is the cardinal need of politicians and educationists; that points to the geography teacher as the man *par excellence* who takes an enlightened view of education, a being whose function it is to act as a sort of grand "correlator" and who lays himself out to "persuade his colleagues to give assistance to the ideal of education as an organized whole"; who "should know intimately what his colleagues are doing, and should be ready at the appropriate time to provide the geographical stimulus." The effect of the "geographical outlook" in teaching chemistry, we are told, is that "the moment the observational work is past, the geographical nature of the content studied becomes more and more important, and the final work of a geographical nature should lie in what may be called the chemistry of industry or the chemistry of business." Statements of this kind seem hardly likely to inspire confidence in the author's judgment or to further the cause of modern geography. Moreover, one may hazard the opinion that the study, which according to him is specially designed to train "outlook, inlook, and sidelook" (sic), must be a much more liberal thing than Mr. Wallis's "economic" geography, and in its method it must be in far less of a hurry to solve every problem that comes along. Otherwise, we shall be perpetuating just the kind of loose thinking that mars the author's example, on pages 85, 88, dealing with the Lancashire cotton trade. Not everyone has Mr. Wallis's penchant for statistics, and though it may be true that from an economic standpoint the Argentine is more important than the Balkan Peninsula, it is safe to say that we shall not cease to give the latter region that attention to which its human interest entitles it, and we shall still go on taking an interest in China even if it is fairly "self-centred and self-contained." Similarly, we shall study towns and their location, although it is difficult to know the exact amount of information about them that an examiner is likely to expect.

Mr. Pickles' book is one of a series which is designed "to meet the recommendations of the Board of Education in the recent 'Suggestions for the Teaching of Geography' (Circular 834)." In particular, it claims to cover the syllabus of the "Second Stage" outlined in that document. The grounds for this claim are not obvious from a perusal of the book, and it is safe to say that the officials responsible for drafting the Circular will not feel flattered that their spirit and intention have been thus interpreted. Not only is the book far too stiff for

children of the age contemplated by Stage II, but it has little in common with modern ideas. Indeed, it smacks of the Physiography of the old South Kensington Examination days, so much so that it is difficult to see what gap it aims at filling. It might, however, be useful to older students in providing the sort of general knowledge that is necessary in order to appreciate properly geographical reasoning, for the subject matter is on the whole sound, though so generalized now and then as perhaps to be misleading. The general treatment is that of a science man rather than of a geographer. This impression is strengthened by the part devoted to Human Activities which is either vague or inaccurate. Thus we are told that "Liverpool as a port is hardly inferior to London in some respects": that "the Humber ports . . . deal with one-tenth of the total British imports and exports . . . ; they import enormous quantities of grain, seeds, dairy produce, timber, and Soya beans." But not a word is said about wool; while the importance of York is that it is a "sorting town." The list could be extended at length. The illustrations, with the exception of the poor map on page 153, are as a whole unusually good.

C. BIRCHENOUGH.

**Dissenting Academies in England.** By Irene Parker, M.A., Tutor and Lecturer in the History of Education, Cherwell Hall, Oxford. (xii + 168 pp.) Cambridge University Press. 4/- net.

MISS PARKER has begun to work in an interesting field which has hitherto been somewhat neglected, and she here gives us the first-fruits of her labours. She has brought together some too-little known facts, which students of the history of education will be glad to have in a readily accessible form. Her list of authorities consulted covers nearly three pages, and includes many original documents. It does not, however, include either of the important storehouses of material to which Dr. Shaw refers in the Appendix to his chapter on the Literature of Dissent in the tenth volume of the *Cambridge History of English Literature*, and which, he says, "still needs to be worked up"—the *Calendar of State Papers Domestic*, 1672-3, and C. L. Turner's *Original Records*, 2 vols., 1911. Perhaps we may hope that Miss Parker will, in time, examine these sources, and give us a more satisfying account of the work of the academies than is possible in the short space she has here allotted to it. The second chapter and the Appendix—together, 106 pages—contain the essence of the book. The first chapter, entitled "The Development of Realism in England," seems to us quite unnecessary, for no evidence is given that the early academies worked on realistic lines, though this seems often to be assumed. Its brevity, perhaps, accounts for its giving a picture more or less distorted. In any case, the 44 pages it occupies could have been more profitably filled by matter directly related to the subject of the book. The third chapter is rather eulogistic than critical, and is too slight to be of much value.

Indeed, criticism is mainly wanting throughout. Miss Parker is an enthusiast, and has the defects of her qualities. So she makes claims for the academies which are hardly borne out by the evidence she advances. That the academies did good work, especially in the last half of the eighteenth century; that they introduced modern and scientific subjects in various degrees and at different dates into their courses of study; that their teachers were often men of learning and ability is undoubtedly true. That they trained some distinguished men is certain; but so did many other private schools. The existence of these is ignored, and the grammar schools, bound by their trust-deeds, and the universities, are assumed to be the only rivals of the academies. For the latter a great superiority is assumed from the beginning. Yet, when we are informed that the earlier academies "resembled the grammar schools, but showed a tendency to work on university lines, the tutors, university men, naturally employed all the methods already familiar to them" (p. 58), and that "the text-books were those ordinarily used by university students" (p. 74); when we examine the curriculum at the Bethnal Green Academy given on p. 55, and are told that in the early eighteenth century at Tewkesbury "during college hours Latin had always to be spoken" (p. 99), and that in the middle of that century most of the tutors lectured in Latin (p. 92); when we note the stress laid on disputations; we cannot but suspect that the academies in general were less modern in methods and spirit than Miss Parker throughout assumes. That some in the later years, especially Northampton and Warrington, were pioneers in modern conceptions of instruction is true, and it is this which makes us desire to know more about them. But the assumption made on p. 96, that the most advanced academies were typical of those which were

less prominent, is not supported by evidence. On the contrary, indeed, we are frankly told that "practically no records were kept of the actual teaching in the majority of academies" (p. 77).

We think, too, that Miss Parker exaggerates the actual importance of the academies. Largely training schools for preachers, nearly always small, never numerous, their actual effect on English education does not appear to have been great. Indeed, unless this be granted, it is difficult to see how Miss Parker can maintain the contrast she draws between the progressive academies and the continuously deteriorating "other educational systems" (p. 127).

There seems to have been some carelessness in revising the book. We have noted wrong dates on pp. 73, 74, and 84; and the footnotes on pp. 56 and 60 give wrong cross-references. We fail, too, to see the necessity for reprinting pp. 90-92 on pp. 147 and 148; or for giving the numbers of students taking various courses at Warrington three times (pp. 107, 159, 160), especially when at least one of the lists is printed inaccurately.

We cannot say that Miss Parker has given us a wholly satisfactory history of the academies: but she has begun a task which is well worth carrying to a completion. We shall hope in time to receive a more adequate and judicial treatment of the subject from her pen.

J. WELTON.

### BOOKS RECEIVED.

*(Reviews of several volumes in this list are, owing to want of space, held over until the next issue.)*

Briggs and Bryan's Tutorial Algebra. Advanced Course. Fourth Edition. University Tutorial Press. 6/6.

Handwork as an Educational Medium. By P. B. Ballard, M.A., D.Lit. (228 pp.) Allen & Unwin. 3/6 net.

The Education of Karl Witte. Translated by Leo Wiener; edited, with an introduction by H. Addington Bruce. (xl + 312 pp.) Harrap & Co. 4/6 net.

A History of the Ancient World. By Hutton Webster. (xxii + 682 pp.) Harrap & Co. 6/- net. (Illustrated.)

The Teacher's Montaigne. By Geraldine E. Hodgson, Litt.D. (284 pp.) Blackie & Son. 2/6 net.

Towards Racial Health. By N. H. March, B.Sc. (ix + 326 pp.) Routledge. 3/6 net.

Whitman and his Poetry. By H. B. Binns. 167 pp. Harrap (Poetry and Life Series). 1/- net.

Chaucer and his Poetry. By E. W. Edwards. (218 pp.) Harrap (Poetry and Life Series). 1/- net.

Educational Values and Methods. By W. G. Sleight. (viii + 364 pp.) Clarendon Press. 4/6 net.

The Lesson in Appreciation. By F. H. Hayward. (xv + 234 pp.) Macmillan. 3/6 net.

An Introduction to School Hygiene. By W. B. Drummond. (x + 237 pp.) Arnold. 3/6.

Psychological Studies. From the Psychological Laboratory, Bedford College for Women. (161 pp.) London University Press. 2/6.

A Child's Garden of Verses. By R. L. Stevenson. New edition for Schools, with Introduction by Guy Kendall. (xv + 80 pp.) Longmans. 1/- net.

Experimental Plant Physiology. By Lucy E. Cox. (viii + 111 pp.) Longmans. 2/- net.

Contes Bleus. By E. Laboulaye. Edited by C. W. Merryweather and H. Nicholson. (viii + 100 pp.) Longmans. 1/6 net.

Exercises in Prose Composition and Literature. By G. C. Dent. (299 pp.) Clarendon Press. 3/6.

Practical English Composition. By C. M. Garish and M. Cunningham. (iv + 310 pp.) Heath & Co. 2/6.

Composition for Junior Forms. By G. H. Green. (vii + 84 pp.) A. & C. Black. 1/4.

I Serve: A handbook of Personal Service. By G. H. Green. (xii + 132 pp.) A. & C. Black. 1/4.



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# UCL Legacies of Eugenics Project

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## THE SPECIAL INTERESTS OF CHILDREN IN THE WAR AT DIFFERENT AGES.<sup>1</sup>

By C. W. KIMMINS, M.A., D.Sc.

IN order to obtain information as to the special interests of London children of different ages in regard to the War, I have had essays written by all the children in ten senior departments (five boys and five girls) of elementary schools. No preparation was allowed, and no notice given. The children were told to write as much as they could about the War in fifteen minutes. No child was allowed to exceed the time limit.

In all, 3,081 papers were written by 1,511 boys and 1,570 girls. In order to obtain as far as possible the real interests and ideas of the children, the common material in the various groups indicative of lessons and talks on the subject by the teachers was carefully eliminated.

Although, naturally, there is a large amount of overlapping in the interests and ideas at different stages, it is possible to group them broadly according to the ages of the children.

### 8 Years of Age.

#### (a) BOYS.

The boys give a blurred account of the various activities involved in the conduct of the War. Bombs bursting, guns going off, ships sinking, men fighting all day and all night, brave English, cruel Germans, English winning battles, Germans losing, and so on, are dealt with in unrelated sentences. It is just a confused mass of actions and ideas. The only people referred to are the English, Germans, and the Belgians, generally called "Belgiums" or preferably "Beljams."

#### (b) GIRLS.

The girls are affected by very different elements. The sufferings of the soldiers, the cruelty of Germany to Belgium, especially to Belgian children, the khaki uniforms of the soldiers, and the heroic deeds or sufferings of relatives who have joined the Forces, are of the greatest interest. The activities of War itself appear to make no appeal to them. Like the boys, the girls only refer to the three nations. At this age there are practically no references to the Kaiser, although he figures prominently in the essays of the 9-year-old children. Scarcely any reference is made to the cause of the War.

### 9 Years of Age.

#### (a) BOYS.

The boys give more detailed accounts of fighting. They refer by name to battles and generals, and references are constantly made to

<sup>1</sup>A paper read in the Psychological Section of the British Association, Sept. 9th, 1915.

Lord Kitchener. They are much interested in aircraft and submarines, the different kinds of guns and shells, the digging of trenches, and so on. Much is written about the sea, and special interest is taken in the Dardanelles. Many references are made to Victoria Crosses. The treatment of German and English prisoners is compared in very simple terms. The sufferings of Belgium, and the debt we owe to Belgium, are referred to at this age, and throughout the essays of the older boys and girls, the feeling of sympathy with, and gratitude to, Belgium is a subject of constant reference.

There are a few curious references to the cause of the War, e.g.: (1) "The Kaiser is fighting because he wants to be King of England." (2) "The Emperor of Germany said, 'I am the right man, because I am the son of Queen Victoria,' but the English said they would not have a German to rule over them." (3) "The Germans are losing; I wish they would give in now, then our King would be King of Germany"; and (4) "We are fighting because we want to catch the Kaiser and the Black Prince."

#### (b) GIRLS.

The girls make very few references to the fighting, and do not mention the names of soldiers or of battles. They dwell principally on the sufferings caused by the War, the cruelties to English prisoners, the dearth of food, bread tickets in Germany, and making things for soldiers. Much interest is shown in soldiers and sailors and their uniforms. The general dislike of the Germans is evident, and much sympathy is shown for the Belgians. There is much in the essays about Red Cross nurses. Constant references are made to the wounded soldiers, e.g., "The dying soldiers will never see the beautiful spring."

It is difficult to trace the origin of such statements as (1) "The Russians are very brave: they drove the Germans out of England." (2) "We are sorry to hear that Lord Nelson is dead, and we are sorry to say the nasty Germans killed him." (3) "A man was made dumb by the War, but he spoke again on touching a hot water pipe"; and (4) "Our soldiers have nothing to do in the trenches, so we have sent them some magazines."

The war-like temperament which finds its full expression among the 10-year-old girls is foreshadowed here by such statements as "If I had been a man, I would have been there (fighting) long ago, but I am not old enough yet for anything."

#### 10 Years of Age.

A great advance is seen. The record of unrelated events is replaced by more or less definite opinions with regard to the War. This is much more clearly seen in the case of the girls than in that of the boys. It is evident that at this age boys read the newspapers and talk much about the War. They are beginning to regard it more as a whole, and have views of their own. A much more intelligent attitude is being taken.

## (a) BOYS.

At this stage boys are very proud of having relatives with the Forces, and think that their actions will naturally be of interest to others, e.g., (1) "When my uncle came home from the War, he shook hands with me"; and (2) "My father captured a German soldier, who had a nice knife. The German soldier gave his knife to my father."

Much interest is now shown in Belgium and the doings of the Belgian refugees. Great pride is taken in the Navy. Many references are made to drilling and recruiting, and the need for having plenty of men. The boys become interested in the reason why we went to war, and write less about guns, shells, bombs, and aircraft.

## (b) GIRLS.

The girl at this age has suddenly become very bellicose, and even wishes to enter into personal conflict with the Kaiser, e.g., (1) "If I could get hold of the Kaiser I would kill him or put him to death or do something to him"; (2) "My mother thinks the Kaiser and Little Willy and all the rest of them ought to be sent to prison"; (3) "I would like the Kaiser to stand on a rock so that I might have a shot at him"; (4) "I wish I was a man so I could fight"; and (5) "My mother says she would go and fight if they would let her."

The girl at this age rejoices at the news of any heavy losses by the Germans, e.g., "The War is getting very nice now; the English are killing thousands of Germans." She is now keen on recruiting, and thinks it is a glorious thing to die for one's country. References are made to the necessity for everyone "doing his bit." Anxiety is felt about the price of food, and the possibility of the Germans coming to England. She has a great desire to become a Red Cross nurse when she grows up. For the first time the girl is interested in the Navy and the doings of our soldiers and sailors. She still expresses great sympathy with those who have suffered from the War, especially with the Belgians, and occasionally with German mothers. Her general attitude at this age is, however, that no suffering should deter us from continuing the fight until the victory is won. The girl of 10 is thus far more bellicose than the boy of the same age. It is very different at the age of 11.

## 11 Years of Age.

## (a) BOYS.

The boy's attitude to the War now becomes more warlike; he is anxious to take part in the fighting, and there is much virulent abuse of the Kaiser and his followers, e.g., (1) "His name is William Kaiser; I think that he ought to be hanged"; (2) "The Kaiser is a beast"; (3) "Germany ought to be wiped to pieces"; and (4) "We call the Germans cowards because they stick babies on bayonets and run away, and they also squeal like pigs."

Many references are made to air raids, e.g., (1) "The Kaiser drops bombs on Kent; not many people will go to Kent this year";



and (2) "At Southend during the raid the Germans came to the houses and looked all over the place for babies."

The boy is now very keen on recruiting, and refers frequently with pride to the work of the Navy; he speaks of Jellicoe and Kitchener generally without prefixes. Up to this age he has lived almost entirely in the present, with just a few references to the future, especially with regard to his anxiety as to the food supply and increasing prices. He now deals with the recent past, and discusses the origin of the War, about which, in some instances, he has curious ideas, e.g., (1) "The Kaiser wanted to be Emperor of all the world;" (2) "The Turks came out on the German side when the Austrians were done in"; (3) "Then mighty Russia said, 'I will help the Germans,' but when she heard how cruel the Germans were she said 'No, I will help the British'"; and (4) "It it had not been for Lord Kitchener we should have been beaten and under German rule."

Other accounts give fairly clear ideas of the part played by Belgium. This has been well grasped by the children of this age. Here is a dramatic account of the early days of the War—"Germany telephoned to Belgium to ask if they could go through their country, and they said 'No!' 'Then,' said the Germans, 'we shall fight you.' No sooner had they set foot on Belgian soil than they telephoned over to England. That night the British Army sailed across the English Channel."

The boy at this age regards the War much more as a connected whole, and is glad to be associated with it. "We are losing many soldiers, but still we are fighting for a cause." He is glad to see the Colonies joining in. His one regret is that he can take no part in the fighting. The boy's attitude at the age of 11 is very like that of the girl of 10 in his impulsive desire to fight.

#### (b) GIRLS.

The girl at 11 is no longer so bellicose as she was at 10 years. She is depressed with the sufferings of the soldiers, and her anxiety with regard to the shortage of food is increasing. Her interest in the Dardanelles is evidently due to the fact that she thinks that our success there would mean cheaper food. Schools are being converted into hospitals, and she is continually hearing of soldiers being killed and wounded. The sufferings of the War appear to depress girls more at this age than at any other.

The doings of Red Cross nurses again receive much attention, and their bravery is extolled "for picking up the wounded soldiers on the battlefield." The idea appears to be quite prevalent among these girls that the Red Cross nurses are in the fighting line.

Girls of this age also think about the origin of the War, and their accounts are generally more intelligible than those of the boys. Here, however, as with the boys, very absurd statements are made, e.g., (1) "The War was declared because the Prince and Princess of

Australia were killed"; (2) "The Emperor of Germany insulted Queen Victoria when he was at Windsor, and King Edward smacked him round the face; he said he would be avenged"; and (3) "The War began because the Kaiser wanted England for his own, but our King would not let him have it, so he said, 'I shall fight you.'" Much confusion exists in accounts of the origin of the War about the "scrap of paper."

There are now very few references to recruiting, the pugnacious attitude has almost entirely disappeared, and there are very few expressions of personal antagonism to the Kaiser. Matters of mere local interest do not now find such an important place in the essays. Air raids receive a certain amount of attention. It is remarkable, however, that so few references are made to the sea attack on Scarborough. The word "baby-killer" is rarely mentioned.

The attitude of the 11-year-old girl is thus very different from that of the 10-year-old. Another change almost as clearly marked is to be seen in the essays of the girl of 12 years of age.

### 12 Years of Age.

The most striking advance made in the essays of the 12-year-old children—boys and girls—is that the opinions expressed are as a rule no longer *ex parte* statements. There is now a definite balance to be observed. Evidence is weighed, and the pros and cons are compared.

#### (a) BOYS.

The boys express a desire for the end of the War because of the terrible sacrifice of lives, the enormous cost that war involves, and the increased price of food. The origin of the War is a matter of more interest, but here the difficulty of separating the views of the teacher from those of the child is much greater. The higher motives are referred to, e.g., (1) "We have gone into this War for the sake of freedom." The ambition of the Kaiser as the prime cause of the War is insisted upon. Horror is expressed at the wanton destruction of beautiful things, e.g., Rheims Cathedral.

A much more intelligent view is taken of the events of the War, and there is scarcely any reference to unimportant matters of local interest. The problems of victory and peace are discussed, and the great need is pointed out of having an adequate supply of men. The Zeppelins and submarines are referred to with fuller knowledge, and torpedoes are spoken of as missiles of destruction. Reference is made to the great preparation made for the War by Germany, e.g., "Germany sent spies to England to build manufactories with concrete roofs for guns."

Up to this age, England, Germany, and Belgium have practically monopolized the interests of the boys, but references are now made, though only occasionally, to Russia and Turkey. The help given by

the Colonies receives more attention, and the debt we owe to Belgium is continually referred to. The attitude of Germany is condemned, but in more measured language.

#### (b) GIRLS.

The girl's attitude has changed considerably. The depression which was so marked at the age of 11 is now replaced by the dawning of the pride of race. Such expressions as "I would not like to be a German; I am proud to think I am an English girl," are characteristic. Now and then there are outbursts of anger, such as "I would like to tip the Kaiser off his high and mighty throne," but they are infrequent.

The origin of the War is referred to in greater detail, and much is written about the "scrap of paper," about which there is still much misunderstanding; and such vague references as "The scrap of paper is a thing which was so called by the German War Minister" are common. The moral depravity of the Germans in destroying beautiful things, and the cruel treatment of Belgium, are deplored. Gratitude is freely expressed to "Our brave soldiers who have died to keep England great."

The advantages and disadvantages of the War are discussed. One of the minor advantages is said to be "That people have learnt how to knit"; and one of the disadvantages "That many girls will remain old maids for want of men." The methods of the Germans are compared with those of "The Ancient Britons in the times of savagery." The chances of success in the War are sensibly considered, and confidence is expressed in our final victory. The necessity of keeping up our spirits is suggested, e.g., "We must not be down-hearted, but must all do our best, and be thankful things are not worse." The girl at this age is again keen on recruiting, and urges the importance of every available man joining the Forces. For the first time mention is made of a specific battle—the battle of Ypres—and the girl appears to be interested now in the main outlines of the War.

#### 13 Years of Age.

The most significant feature of this age is the general increase in maturity of ideas which is quite remarkable for young children. This is especially the case with the girls, who in this respect are considerably in advance of the boys.

Incidentally it may be mentioned that an advance is to be noticed not only in the volume of written material but in the general plan of the essays. The short time allowed, however, for writing them naturally prevents anything in the nature of a full treatment of the subject.

#### (a) BOYS.

The boys give more accurate accounts of the origin of the War, and there is, in some of the better essays, a nice sense of proportion in discussing the progress of the War. There is far less about the



details of the fighting or of particular events. The increased cost of food receives special attention, and the probable effect of the successful issue of the fighting in the Dardanelles in regard to this, e.g., "Let us hope that the Lord will give our Navy the power of taking Constantinople, that town which is holding back our daily bread." The seriousness of the War is often referred to, e.g., "This War is the most abominable thing in creation one could wish for."

Pride is expressed in the Army and Navy, and confidence as to the ultimate result of the War. References are made to the fine spirit which is shown in connexion with the War, e.g., "Rich men, who think more of their country than their riches, have been killed," and the effect the War will have upon the future of our Empire.

#### (b) GIRLS.

The girls refer particularly to the moral fall of Germany in breaking all the laws of warfare, e.g., (1) "We must not be Germanised"; (2) "We are fighting against German ideals"; (3) "Life under German rule would be intolerable, so we must fight to a finish"; and (4) "We are fighting for the cause of justice and freedom."

There are many expressions of pride in England, and there is much general evidence of a fine spirit of patriotism. There are fewer references now to the dearness of food or the sufferings of soldiers. The girl of this age prefers to look at the effect the War will have upon the future of England and of the other nations engaged, e.g., "Turkey has gone to her doom." She is particularly anxious that full justice shall be done to Belgium, e.g., "It hurts me very much to think how Germany has served the Belgians." She realizes the magnitude of the War, and that it will probably last a long time, e.g., (1) "There never will be such a War again"; (2) "The horror of this dreadful War makes me shudder and hope that it will soon come to an end"; (3) "This War is like a second Battle of Waterloo"; and (4) "All our Allies are doing their best, and it is hoped the Dove of Peace will come to England soon."

#### General Remarks.

There are many interesting points which emerge in this investigation of the interests of children in the War at different ages. Among the more important of these are the following:—

(1) Throughout the essays there are scarcely any references to the part played in the War by either France or Austria. With the exception of the set of papers from one boys' school, there is also practically no reference to Russia, and the Vistula is mentioned less than six times in some 3,000 essays; the countries referred to are almost exclusively England, Germany, and Belgium.

(2) The references, apart from those dealing with the origin of the War, are almost entirely confined to the incidents happening

within a comparatively short time of the date on which the essays were written. Such important events as the march on Paris, the retreat from Mons, and the battle of the Marne, receive no attention. Matters distant in time or space appear to have little interest for young children.

(3) It would naturally be imagined that the darkening of the streets would, especially with the younger children, be dealt with fully as a consequence of the War, whereas it is scarcely mentioned. It would appear that in the eighth month of the War the children had become so accustomed to the darkening of the streets that it had ceased to be of interest to them.

(4) Scarcely a single member of the Cabinet is mentioned, with the exception of Lord Kitchener, to whom, especially in the boys' essays, constant reference is made.

(5) The abnormal number of references to the sufferings of the Belgians, and the debt we owe to Belgium, is probably partly due to so many Belgian children now being educated in the elementary schools.

(6) The Scarborough raid and the killing of so many young children has produced far less permanent interest, even among the girls, than would have been anticipated.

(7) The excessive interest taken in the operations in the Dardanelles is clearly due to the supposed connexion of a free passage to the Black Sea with the price of food. This is generally apparent by definite statements in the essays.

(8) The most interesting results are (i) The clearly-marked change of interest from age to age; (ii) the radical difference between the interests of boys and those of girls up to the age of 12; (iii) the very well-marked bellicose attitude of the girl of 10, followed by a period of severe depression at 11, and a recovery at 12 years of age, accompanied by a feeling of pride of race; and (iv) the maturity of ideas on a subject like the War at such an early age as 13, more especially in the case of the girls, who are in this respect at least a year ahead of the boys.

## NORMS OF PERFORMANCE IN READING.

By P. B. BALLARD, M.A., D.LIT.

WHAT is the fundamental and essential factor in the ability to read? Binet seems to assume it to be fluency; for the scale for marking reading in his *Bareme d'Instruction* is based upon the frequency of such pauses as are not necessary to elucidate the meaning of the passage read. The examinees are classified according as they pause after the letters, the syllables, the words or the phrases. A more recent investigator\* discriminating between the silent reading we do for our own use and pleasure and the oral reading we do for the benefit of others, claims the former to be the more important, and selects the comprehension of the material read as the first essential, and speed of reading as the second. Compared with these, intonation, expression and pauses he regards as unimportant. For this point of view there is much to be said. It is significant of that happy change which is taking place in our schools—the change from reading as an elocutionary display (a very indifferent one at best) to reading as a pleasurable pursuit. But comprehension is a very difficult thing to measure; and it presupposes a more rudimentary ability which is quite easy to measure—the ability to translate certain visual symbols into sounds, whether those sounds are actually produced or are merely imagined. This is the basal ability—the *sine qua non* of reading—the step which no amount of intelligence would enable the learner to dispense with. His intelligence will, of course, eke it out; it will enable him to anticipate coming words, to respond to slighter cues; but ultimately his power to read is rooted in his ability to translate symbols into sounds, and this fundamental ability is what I set out to measure. It is not the whole of reading; but it is the basal and indispensable part, and it is the part which best lends itself to exact measurement.

The test I adopted after some preliminary experiments was the following:—

### ONE MINUTE READING TEST.

is, me on at by so us an it or be  
to as he of in go up am if no we  
my ox do the and for but him  
are can she lot let you not was  
out try see mix van now boy saw

\* Daniel Starch; The Measurement of Efficiency in Reading. *The Journal of Educational Psychology*, VI—1, p. 2.



bit met top run man pet cat get  
 did dog bad red cup bee lit pin  
 had ran pen nut big old yet rob  
 gun leg fun lip new fog has sit  
 sly wig mud box ink sat end cut  
 pay fed who six lad wet dry cow his  
 peg tin say eat any far set bud kid pup  
 fox ask egg cab ill use jam all pit got  
 sad tea sky one yes fur act toe her our  
 ten arm rock gone feel that rich till long  
 flat this part foot made upon came mile  
 back sand time said then wall into were  
 done walk much loss seem went with come

The pupil was given a paper on which the test was printed as above, and was asked to read as fast and as carefully as he could until he was told to stop. The number of words correctly read in a minute—that is, the total number read minus the number misread—gave the score. If the examinee hesitated for more than five seconds over a word and did not seem to be on the point of saying it, he was prompted and told to pass on, that particular word counting as an error. He was thus prevented from being too heavily penalized by his inability to recognize one or two particular words.

It is quite clear that the test does not take intelligence into account; it is designed to measure the bare mechanical art of reading—the degree of facility with which a pupil can translate the symbols of the simplest and commonest words of the mother tongue into the words themselves. Sense material was discarded as tending to confuse the issue. If an intelligent lad, for instance, starts reading a fairy tale which begins “Once upon a time,” the recognition of the first word brings inference into play, and the rest of the phrase is largely a matter of memory. But no such intelligent anticipation is possible in the test used; each word, standing isolated in meaning, has to be read without any help from the context. It has to be read, not inferred.

Much scorn has been levelled at this type of reading. It has even been denied that it is reading at all, and has been contemptuously called “barking at print.” But my investigation tends to show that this mechanical response to the seen word, this barking at print—call it what you will—is not only the basis of all reading, good as well as bad,

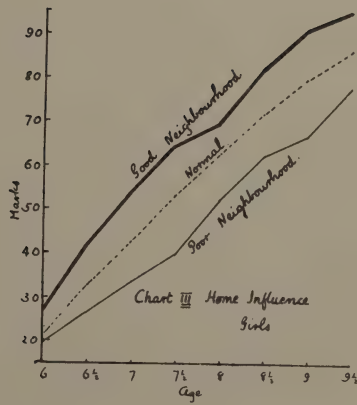
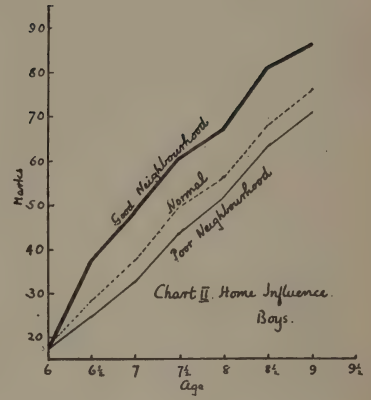
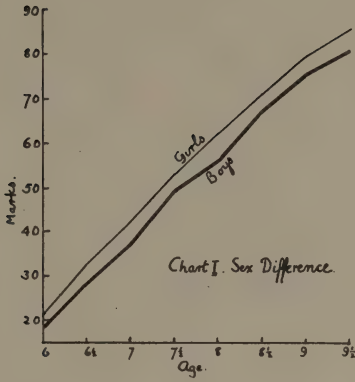
but is also a trustworthy criterion of the interest with which reading is followed as a pursuit.

As a test common to children of different schools and different ages, it possesses many points of advantage. Familiarity with subject-matter, which must always be a variable and disturbing factor where sense material is used, does not enter into the question; there is no subject-matter. A peculiar knowledge of uncommon words avails nothing: there are no uncommon words. However young a child may be, however rudimentary his knowledge, if he can read at all, he can read some of the words in the first three lines; for all the common two-letter words in the language are to be found there. And however proficient a child may be he will find the task of reading the whole of the 158 words in one minute quite as much as he can accomplish.

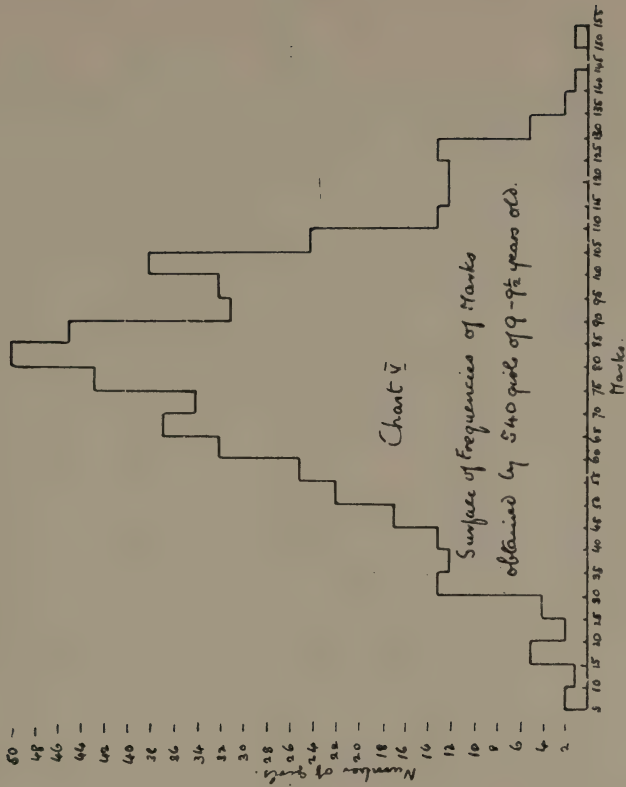
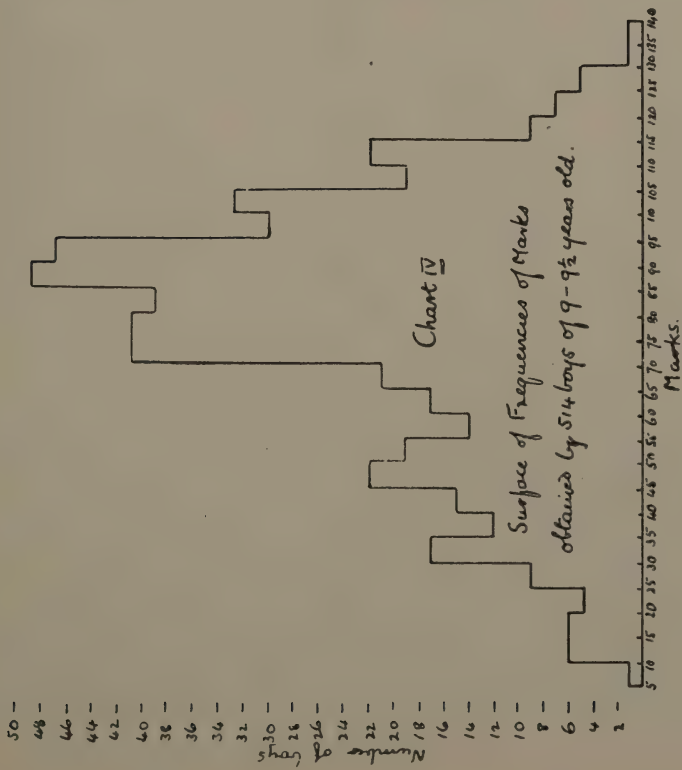
But these *a priori* reasons in favour of the test do not dispense with the necessity of testing the test—of comparing, for instance, the results obtained by using this test with those obtained by using sense material, such as an “unseen” passage in the ordinary school reader. Such a comparison I carefully made with ten boys of about eight years of age. The mode of scoring was in each case the same—the number of words correctly read in one minute. The first point to be noted is that although 32 per cent. more words were read per minute in the continuous prose than in my test, the order of merit was, with one trifling exception, the same in both cases. To test one kind of reading is virtually to test the other. The second point to be noted is that the discrete material gives a higher degree of reliability or steadiness; for when the children were put to read the same passages again after five minutes interval, they improved but 7 per cent. with the discrete words as compared with an improvement of 22 per cent. with the continuous prose. The 7 per cent. improvement was perhaps entirely due to a loss of nervousness; but most of the improvement in the other case was doubtless due to the acquired familiarity with the meaning. As a test, therefore, the discrete words are better suited for repeated use.

In estimating the speed of reading, it is well to be clear what precisely we are measuring. For there are four possibilities. We may measure the normal or the maximal speed of either oral or silent reading. The speed measured in this test is the maximal for oral reading.

The question may be raised: how far is the recorded speed a real index of the speed of reading as distinct from speed of articulation? There is little doubt that adults can read silently very much faster than they can read aloud—very much faster than they can articulate the words. But this is not true of a young child. I found by testing a number of children of 7 years of age that they could speak or recite at the rate of 170 words per minute while they read the test words at the rate of 40 per minute. Again, girls of  $9\frac{1}{2}$  years old who read 80 words per minute were able to recite 220 words per minute.







The test was given in 49 schools to 11,588 boys and 11,082 girls. The scores given below indicate the average number of words read in one minute :—

TABLE I.

Age.	Averages actually obtained.		Probable Norms.	
	Boys.	Girls.	Boys.	Girls.
6 — 6½	18·4	21·2	18	21
6½ — 7	28·4	32·6	28	33
7 — 7½	37·3	42·5	38	43
7½ — 8	49·1	53·1	48	53
8 — 8½	56·2	62·4	58	63
8½ — 9	67·6	71·2	68	72
9 — 9½	75·6	79·4	76	80
9½ — 10	81·3	85·9	82	86
13½ — 14	115	122·4	115	122

TABLE II.

*Comparison of Schools in Good and Poor Districts.*

Age.	Schools in Slums (10).		Schools in Good Neighbourhoods (9).	
	Boys.	Girls.	Boys.	Girls.
6 — 6½	17·8	19·4	17·8	26·9
6½ — 7	24·8	26·2	37·1	41·7
7 — 7½	32·3	33·3	47·9	53·8
7½ — 8	43·4	39·8	60·2	64·0
8 — 8½	51·2	51·9	66·6	69·0
8½ — 9	63·0	62·2	80·5	81·2
9 — 9½	70·2	66·6	85·5	90·5
9½ — 10	77·4	76·7	92·0	94·6
13½ — 14	112·8	112·2	122·6	127·1

The progress with age may be readily seen from Chart I. Generally speaking a steady gain of 20 words per annum is observable from 6 to 9 years of age, after which the rate of gain begins to slow down.

The original experiment stopped at 10 years of age; for I did not regard the test as suitable for older children, with whom the mastering of the mere mechanical factor may as a rule be taken for granted; but as an afterthought I extended it so as to include children between 13½ and 14. The results show a considerable flattening of the curve after 10, the average gain per annum being reduced to less than 9.

*Distribution of Marks.* In order to ascertain the mode of distribution, the individual scores of 514 boys and 540 girls between 9 and 9½ years of age were examined and arranged so as to show the surface of frequencies (see Charts IV and V). The average mark for the boys was 77·4, and for the girls 80·5. It will be seen that the distribution

does not depart widely from the normal. That of the boys is more "skew" than that of the girls, the mode being higher although the average is lower. The girls' marks show the usual characteristic of the sex: they are more closely grouped about the central measure.

*Home Influences.* Among the '49 schools I included 10 which were reputed to be attended by the poorest children in London; and the figures in Table II (and in Charts II and III) enable the reader to compare these schools with those situated in good residential areas. It will be seen that both boys and girls in good neighbourhoods are about 6 months (10 marks) in advance of the average; and in poor neighbourhoods the boys are 3 months behind, and the girls 6 months. Thus for the extreme types of home we find a difference of 9 months for boys and 12 months for girls. A girl of 8 in Dulwich can read as well as a girl of 9 in Bermondsey.

Through the courtesy of a friend, I was enabled to secure results from 6 elementary schools in Lancashire. In general tendency they tallied with the London results; but the Lancashire boys were 3 months ahead of London boys, and the girls 4 months ahead. The 6 schools, however, included no poor schools, and there is reason to believe that the social conditions were above the average.

There is nothing to indicate whether the superiority of the children from good homes is due to heredity or environment—to higher native ability or to better opportunities. Both probably contribute.

*Sex Differences.* The statistics obtained lend support to the popular belief that girls read better than boys. Generally speaking, they are 5 marks or 3 months ahead. But it is a curious fact that this difference does not obtain in slum neighbourhoods. There the boys read quite as well as the girls. This is not merely true of the 10 schools taken in a lump; but, with one exception, of each of the 10 schools individually. Whatever the reason may be, whether it is due to the girls being more fully employed minding the baby—there generally is a baby—or doing domestic work, or whether this intrinsic sex difference does not hold good generally, the fact itself seems to admit of little doubt.

*Number of Errors.* Occasionally a reader rushed through the test with little regard to accuracy, and thus made a fairly high score in spite of many blunders; whilst another reader would proceed more cautiously and secure a lower score although he made no blunders at all. The majority, however, maintained a steady level of cautiousness; and on an average about three mistakes were made by children of all ages. This means that accuracy improved with age, and was roughly proportional to speed; for to get three mistakes out of 86 words read (see score for girls of  $9\frac{1}{2}$ —10) was about four times as creditable as to get three mistakes out of 21 words read (score for girls of 6— $6\frac{1}{2}$ ).

*Method of Teaching.* The method of teaching reading in all the schools tested was some form of the phonic. The alphabetical method pure and simple may be said to be obsolete in London, although the children are generally taught the conventional names of the letters



either at the same time as their phonic values or after the art of reading has been at least partly acquired. The look-and-say mode of reading into which all other forms ultimately merge, is to a greater or lesser degree incorporated in the other systems. In fact, the system in vogue is mixed, with the phonic element predominating. There are, however, various forms of the phonic method current, some simple and some complex. Perhaps the most systematic and complex of all is the Dale method; and in 19 out of the 49 schools this method is followed. Do the scores at these 19 schools afford evidence of the superiority of this system? How do they compare with the scores at the 30 non-Dale schools? Taken as a whole the Dale boys are 1 month behind when they are under 7 years of age, and 2 months in advance after 7; while the girls are 2 months behind when under 7, and 2 months ahead after 7. But 5 of the 19 Dale schools are included in the 9 schools above referred to as situated in the wealthier neighbourhoods. And if the influence of home and district be eliminated it is doubtful whether the Dale results are as good as the non-Dale. It is certain that they are no better. Here is a system of high repute, regarded indeed by some as the mark of up-to-dateness in infant teaching—a system requiring special training on the part of the teacher, and involving the use of special apparatus and special books; but judging from the results achieved, it is no better as a means of teaching reading than the ordinary phonic system in common use. It is true that it has other merits. It includes other things besides reading proper, such as printing, drawing, and phonetic analysis—things in themselves valuable; but taken purely from the reading point of view, it fails to substantiate the high claim generally made on its behalf.

What then is the salient characteristic of method in the schools where the test shows reading to be exceptionally good? It is this. In the good schools reading is encouraged as a pursuit, and not merely taught in a series of lessons. The children read for the sake of the story, not for the sake of reading. It is a pleasurable occupation, and not a tiresome phonetic drill, nor yet an elocutionary display. Phonetic drill and elocution have their place in school routine, but the root of proficient reading grows in other soil. In the school where the reading is best of all, even children of six read small fairy tale books for pleasure.

There is one arresting exception to the above generalization. In a certain infants' school where no private reading takes place, but a large amount of word-building is taken on the blackboard, the result reaches high-water mark; but in the senior school the curve sinks to the normal: the proficiency is not maintained. It will thus be seen that the same apparent results may be obtained in the earlier period by opposed methods; but while the momentum is kept up by the one method, it is lost by the other. As ever, it is a question of interest.

*Limitations of the Test.* It should be clearly understood that this test, consisting as it does of words of no connected meaning, is intended

to be used as a test only, and never as material for practice, nor even as suggesting the type of material for practice; for I strongly hold the view that in selecting reading-books for children, subject matter is a consideration of supreme importance. If the subject is of no interest to the child, if it would not grip his attention when read *to* him instead of *by* him, then we must regard it to be of the wrong sort; unless, indeed, we reject the view that the main aim and purpose of the teacher of reading should be to hasten the coming of the time when the child will spontaneously take up a book and read it for the sake of what it has to tell him.

And although the test is oral, it must not be inferred that practice should be entirely oral, or indeed mainly oral. For the out-of-school reading, for which the school reading is a preparation and a training, is almost entirely silent: it is reading as a device for getting ideas. And the training of any specific activity should always, as far as possible, take the form of that activity. It is not always possible. At the earliest stage of reading, for instance, much drudgery in associating symbols with sounds is necessary before the process is sufficiently mechanized for the sense of what is read to stand out clearly and predominantly in the mind. Indeed, for some time, the child, unless he reads aloud—unless there is somebody for whom he feels he is doing something—will not read at all. But the sooner this stage is passed the better.

Again, fluent reading, regarded merely from the mechanical point of view, is mainly a matter of practice, and the amount of practice given in school, especially where individual class reading—reading in turns—is adopted, is so small that many years pass before a fair degree of fluency is attained.

The reasons are now clear why I regard this test as useful for the early stages of reading only. As the child grows older the aspect of reading which becomes increasingly important is the extent to which it can be employed as a thought-getting device—the accuracy and rapidity with which the child absorbs the meaning of what he reads privately.

It has often been pointed out that to read mechanically is one thing; to understand what is read, another. And although it will be granted that a child may do the former without the latter, it is equally certain that he can never do the latter without the former. Until, indeed, a child can read about 100 of the test words per minute, the mechanical art of reading cannot be said to have been mastered; and the utilization of the test is profitable as a means of measuring his fluency; which is roughly a measure of the practice he has had; which, again, is roughly a measure of the interest he takes in reading. Beyond that stage other tests overshadow the mechanical one. Reading, indeed, cannot in any sense be regarded as a simple process, nor can the same means be adopted for measuring proficiency in the earlier and later stages of acquiring the art.

## THE USE OF HISTORICAL DRAMA.

Delivered at the closing meeting of the Conference of Teachers of History  
at Stratford-on-Avon, August 14th, 1915.

By GERALDINE E. HODGSON, Litt.D.

FORTY-SIX years ago Matthew Arnold wrote:—"We have not the notion, so familiar on the Continent, and to antiquity, of *the State*—the nation in its collective and corporate character entrusted with stringent powers for the general advantage, and controlling individual wills in the name of an interest wider than that of individuals."<sup>1</sup> And then, as if he felt the necessity of describing what we put in place of this conception, he wrote:—"this and that man, and this and that body of men, all over the country, are beginning to assert and put into practice an Englishman's right to do what he likes; his right to march where he likes, meet where he likes, enter where he likes, hoot as he likes, threaten as he likes, smash as he likes."<sup>2</sup>

This contrast is not only so arresting but so disastrous that it is hard to realize that his fellow-countrymen smiled, shrugged their shoulders, called him an elegant Jeremiah, and left the whole matter so. Just as he was writing, the political strife over the passing of the 1870 Education Act was at its height. In an almost forgotten book, "The Struggle for National Education," Mr. John Morley wrote:—"There has been a strong disposition in many quarters to make improved education a panacea for all the evils of our present stage of social development, which it is not, nor ever can be."<sup>3</sup>

A perusal of Mr. Morley's pages does not, however, yield a clear idea of his own view of its probable effect. His phrases, foreign as such a process is to his usual manner, see-saw, and nothing choate issues. Much earlier in the book, in a condemnation of the clergy and their opposition to the proposed legislation, he wrote:—"Their organs abound in the well-known nonsense as to its dangers, and solemnly warn us that writing and arithmetic do not make loyal citizens or virtuous men, and that there is no moral power in grammar;" (by the way, William of Wykeham, in the Foundation Deed of Winchester, said "that by the knowledge of grammar justice is cultivated, and the prosperity of the estate of humanity is increased") "that geography does not implant generous aspirations, nor does spelling lead us to flee from iniquity."<sup>4</sup> It is easy, though not in keeping with Lord Morley's more usual mood of urbane wisdom, to express propositions thus, and so to raise a thoughtless laugh. But I venture to think that truth underlies the views of these condemned priests, and that the failures in popular education since 1870, failures written large on the face of this country, are due to an antecedent and more crucial failure. For surely,

<sup>1</sup> "Culture and Anarchy," Popular Edition, p. 36.

<sup>2</sup> *Ibid.*, p. 37.

<sup>3</sup> p. 118.

<sup>4</sup> "The Struggle for National Education," p. 3.



the fact that the 1870 efforts did not establish the value and ensure the propagation of the *content* rather than the *form* of learning is conspicuous, and the results are patent on all sides of us. To put the matter in a sentence, the people of this country have been taught to read, but only a small proportion have been so educated and trained that they know what is worth reading, and why. William of Wykeham used "grammar" in the mediæval sense, when it covered grammar proper, history, literary criticism, archæology, and so forth; and he was right when he held that a knowledge of these things could lead to the cultivation of justice, and could increase human prosperity.

Condemnation of our educational system is easy, and has been over-frequent. What we need is not criticism but remedy; and I venture to think that this lies in attending more to the *content* of education. That must be changed if we are to correct our national failures, and rise to the possibilities of our national splendour. We need something broader, going deeper into the fundamentals of individual and community life; a profounder, more penetrating grasp of human nature; some keener, more sensitive awareness of personal responsibility, a wide-spread increase of the spirit which, in things great, and also things vitally essential if seemingly small, says "Here am I, send me."

Since time is limited, let us consider, under three heads, the possible content of intellectual education.

Mathematics will, or it would be wiser to say may, teach us to reason exactly.

The Physical Sciences will, or may, bring us to grasp the sweep of material forces, and to comprehend the sequence of cause and effect—that most essential and vital of lessons. So many people drift on as if life were a chance, though, were they challenged, they could not for the life of them say clearly what they mean by chance. That effect follows cause according to unerring laws, whether or no we are aware of the precise working of the particular law, seems not to be recognized by many of us.

It is the third, History—taking the word here in its widest sense to include the whole tale of purely *human* activity, man's capacity for Religion, Philosophy, Art, Literature, and for Social, Political, Military, and Economic life—and History only, as I believe, which will teach us to know ourselves and our fellows. If I may venture on an illustration from the current hour, is it not true that we have been invited, *ad nauseam*, to admire German science and technical skill, and therefor and thereupon to award them the intellectual palm? Yet it may well be argued that they are unworthy of that first place, simply because of their obvious failure to understand their fellow-men. They can analyze and utilize natural products; they can invent wonderful engines both of production and destruction. But to understand the point of view of a fellow-creature who happens to differ from them, to understand even

that his attitude is worthy to be called a point of view, this appears to be beyond their capacity. Of course, it just depends on what you erect as the test of ability. Theirs seems to be scientific and technical skill; the one I suggest is grasp of human nature: between the two there is a great gulf fixed. To fail in scientific achievement seems to them to be writing one's self down an ass: to fail in the comprehension of the human mind and heart appears to me that distressing process. *De gustibus non est disputandum*. For all that, Terence's line slips into the mind, "I am a man, and I can think nothing human alien to me." I am sure it must be very nice to possess knowledge of all the processes of Physical Nature, but life is very short, and our prime business is to live as human creatures among our fellows; and so I venture to think that if we have not time for both, the story of Humanity comes first. That is the story which will teach us how to be citizens of "no mean city."

I do not pretend that in school, more particularly if it be an elementary school, children can be taught definitely by book or uttered precept the genesis of the State, nor the efforts and sacrifices necessary to its development and sustenance. To suppose that is to commit the root fault of the makers of the modern fad, Civics. But children in school can be taught (1) by everything with which they come in contact, to get at the cause, the reason, the explanation, where there is one, of it. Readers of the *Life* of the late Bishop of London will remember that one thing he insisted on was that his children should not be futile. That principle was also the mainspring of the education I happened to receive: the right of being helpless, futile, of getting other people to do for you what you could do and ought to do for yourself, did not exist, I am thankful to say, in my home. If I could have my way, that should be the principle of every home and school in the land. (2) In school, children can be taught by personalities and events; and it is here that History, and still more, Historical Drama come to their own.

It is particularly in our elementary schools that we need, difficult as it will be, to increase the formative use of History. To ensure that, we need once for all to destroy that ignorant and absurd conviction—cherished by not a few people—that compared with Science, History and Literature are and always will remain "soft options."

But while History is vitally important, it is also a most difficult subject to handle. It is not only that the truth of History, with its vastness, complication and remoteness, is hard to present to the immature and illiterate mind, but there is the antecedent task of discovering what the truth is. That is not accomplished by a few hasty hours and a handful of text books. If it be hard from the teacher's standpoint, it is no easier from the child's. It is true that to some natures it is easy to do sums wrong and remain in contented ignorance; but certain sums have a trick of becoming so tangled up that even the stupidest grows aware that all is not well. Simple science, too, has means of forcing mistakes upon the maker of them, specially such pervasive forms of

domestic science as cooking or dressmaking. We cannot face the pudding failure on our own table; we cannot get the garment on. But no such difficulty awaits most of us in History: there we may blunder for ever without knowing it, blunder through sheer ignorance, or bias and passion, or intellectual slovenliness, or in countless ways upon which time will not allow us to dwell now.

If the children of this country are to learn its genesis, so that they may shoulder their responsibility, then the Teachers of History must rise to the height of their opportunity. If they do so, is there a calling, save that of the priest, above theirs in dignity and possibility? If there be, I should like to learn what it is. I know our national form of vanity is self-depreciation; I know how we love to wash our dirty linen in the most public spot we can find: but I will not pretend to admire or to wish to adopt such methods. I much prefer William Watson's estimate of us:—

Time and the Ocean and some fostering Star  
In high cabal have made us what we are,  
Who stretch one hand to Huron's bearded pines,  
And one on Kashmir's snowy shoulder lay,  
And round the streaming of whose garment shines  
The iris of the Australasian spray.  
For waters have connived at our designs,  
And winds have plotted with us—and behold  
Kingdom in kingdom, sway in oversway,  
Dominion fold in fold:

\* \* \* \*

So wide of girth this little cirque of gold,  
So great we are and old.

I have no desire to damage any other race or people, but I do desire that our children, *all* of them, shall be brought up to understand the valour, sagacity, endurance, strenuousness and passionate love of justice and freedom which have brought us thus far through the centuries, and have culminated in the present miracle that the sovereign princes and peoples of India and the Boers would rather fight by our side than stand apart or join our foes. That shows that our rulers, as apart perhaps from our politicians, have had some capacity in grasping and handling human nature. Hitherto our ruling class has been restricted. But things are changing, and quickly: the borders of national life are rolling back; the democracy is coming to share in the government, indirectly if not directly; so it is now becoming essential that the story of human life, the potentialities of human nature, should enter into popular upbringing; that not the few, but as many as possible of us, should understand first ourselves and then other people.

Many disquieting events in the last few years have led some of us to question whether the industrial classes—masters and men—in this country have our old love of freedom. They all demand their own liberty, but have they realized the right of others to be free? Individualism is probably a very necessary ingredient in the care for freedom; it is not the only one. Education's work lies here: it has to



teach us that the obverse of a right is a responsibility—the *obverse*, not the *reverse*; that our freedom is imperfect if it impinge unduly on the freedom of others. The balance, the moderation, the delicate equipoise which alone can preserve an individual or a community is not easily acquired by those who have received a limited, or, if not exiguous, a one-sided education.

It is surely here that Historical Drama may avail to help us. It must enter into our schools, all our schools; it must fill a large space on our national stage. Of course, it cannot take the place of an accurate study of History; it can supplement that, and mainly by illumination. Historical Drama might be compared to a search-light thrown suddenly into a dark confused mass of forms and shadows. Long years ago, Dr. Fitch directed attention to the inner truth of poetry when it deals with history, but, after our fashion, many of us paid no heed. The poet may not record the letter, but he catches the spirit. For instance, Shakespeare does not seize on every fact which Holinshed related, but only those which, in his hand, serve as master keys. Even when he takes a fact from a chronicler, he uses it as he will. If he read, as he probably did, in Berners' Froissart:—"as it was informed me, Kynge Richarde had a gray hounde called Mathe, who alwayes wayted upon the Kynge, and wolde knowe no man els . . . And as the Kynge and the erle of Derby talked togyder on the Courte, the gray hounde, who was wont to lepe upon the Kynge, left the Kynge and came to the erle of Derby, duke of Lancastre, and made to hym the same frendly countenaunce and cheere as he was wonte to do to the Kynge," then this story is most likely the basis of those bitter lines wrought from "plume-pluck'd Richard"—

O villains, vipers, damn'd without redemption !  
Dogs, easily won to fawn on any man !

—*Richard II.*, iii, ii, 129.

Here, as Dr. Fitch suggested, the poet gives us the inner truth; not, possibly, the exact photograph of the person, nor the precise category of happenings, but the heart of it all.

Again, I suppose few of us have any very strong feelings about Edward II. We think of him as irredeemably weak, the tool of favourites, the prey of barons, not always themselves over-scrupulous, an object of contempt to his wife: a good-looking, pleasure-loving, purposeless person who might, in some private capacity, have stumbled through life passably, but who, on a throne, was fore-doomed to catastrophe. Yet, in such an estimate, the humane element bulks too small: we forget that even the weak have feelings; that the pleasure-loving estimate pain at something above its value, that the most contemptible would fain, at times, be worthy of honour. It is Kit Marlowe, the dramatist, who without slurring over the incompetence and irresponsibility, yet contrives subtly to redress the balance in some of the most poignant lines in the English tongue—

This dungeon where they keep me is the sink  
Wherein the filth of all the castle falls.

And there in mire and puddle have I stood  
This ten days' space; and lest that I should sleep  
One plays continually upon a drum.  
They give me bread and water, being a king:  
So that, for want of sleep and sustenance,  
My mind's distempered and my body numb'd.  
And whether I have limbs or not I know not.  
O would my blood dropped out from every vein,  
As doth this water from my tattered robes.  
Tell Isabel, the Queen, I looked not thus  
When, for her sake, I ran at tilt in France,  
And there unhorsed the Duke of Claremont.

—*Edward II*, v. 5.

It is not possible for the twentieth century to "reconstruct" accurately and vividly the fourteenth, but surely a bald, truthful narrative—shall I say like S. R. Gardiner's "Student's History"—is redressed, lashed into life and meaning, properly orientated, if we add to, not substitute for it, this moving speech which Edward may never have uttered in fact, but which our own human feeling tells us must very closely reproduce his lonely pain in that dreadful dungeon in Berkeley Castle.

Historical Drama can go further than this; it can explicate character as no mere description or analysis can. It is hardly temerarious to suggest that historians will never agree over Charles I, and so will never present him truly. We know, so far as evidence can carry us, that he was loved and hated; that he broke his word here, and there laid down his life just because he would not yield a principle: before manifold contradictions, the historian at last stands confounded. Not so the dramatist. To some of us Charles lives not in the careful balancings or furious party prejudices of any historian whatever, but in that closing scene of the Play which even Macready, for some unknown reason, could only keep running a week, Browning's "Strafford." In English Drama there are three great pictures of those who, as Pater said, are "a central expression of all that in the revolutions of Fortune's wheel goes *down* in the world: Marlowe's of Edward II, which I have just quoted, the deposition scene in "Richard II," and the last scene of "Strafford." The climax must suffice here:—

STRAFFORD. You'll be good to those children, sir? I know  
You'll not believe her, even should the Queen  
Think they take after one they rarely saw.  
I had intended that my son should live  
A stranger to these matters: but you are  
So utterly deprived of friends! He too  
Must serve you—will you not be good to him?  
Or, stay, sir, do not promise—do not swear!  
You, Hollis—do the best you can for me!  
I've not a soul to trust to: Wandesford's dead,  
And you've got Radcliffe safe: Laud's turn comes next:  
I've found small time of late for my affairs,  
But I trust any of you, Pym himself—  
No one could hurt them: there's an infant, too—  
These tedious cares! Your Majesty could spare them!  
Nay—pardon me, my King! I had forgotten

Your education, trials, much temptation,  
Some weakness : there escaped a peevish word—  
'Tis gone, I bless you at the last. You know  
All's between you and me : what has the world  
To do with it? Farewell !

CHARLES. (*at the door*)

Balfour ! Balfour !

(*Enter Balfour*).

The Parliament !—go to them : I grant all  
Demands. Their sittings shall be permanent :  
Tell them to keep their money if they will :  
I'll come to them for every coat I wear  
And every crust I eat : only I choose  
To pardon Strafford. As the Queen shall choose !  
—You never heard the People howl for blood,  
Beside !

BAL. Your Majesty may hear them now :  
The walls can hardly keep their murmurs out :  
Please you retire !

CHARLES. Take all the troops, Balfour !

BAL. There are some hundred thousand of the crowd.

CHARLES. Come with me, Strafford ! You'll not fear, at least !

STRAFFORD. Balfour, say nothing to the world of this !  
I charge you, as a dying man, forget  
You gazed upon this agony of one . . .  
Of one . . . or if . . . why, you may say, Balfour,  
The King was sorry : 'tis no shame in him :  
Yes, you may even say he wept, Balfour,  
And that I walked the lighter to the block  
Because of it. I shall walk lightly, sir !  
Earth fades, heaven breaks on me : I shall stand next  
Before GOD's throne : the moment's close at hand  
When man the first, last time, has leave to lay  
His whole heart bare before its Maker, leave  
To clear up the long error of a life  
And choose one happiness for evermore.  
With all mortality about me, Charles,  
The sudden wreck, the dregs of violent death—  
What if, despite the opening angel-song,  
There penetrate one prayer for you ? Be saved  
Through me ! Bear witness, no one could prevent  
My death ! Lead on ! ere he awake—best, now !  
All must be ready : did you say, Balfour,  
The crowd began to murmur ? They'll be kept  
Too late for sermon at S. Autholin's !  
Now ! But tread softly—children are at play  
In the next room.

If that cannot present a complex human problem like the character of a Stuart, where is the historian who can ? The fact here is that the Stuarts had that strange, elusive, radically unfair quality called "charm" : so the historian can talk as he will, but he leaves us cold. But the dramatist shows us Charles through Strafford's eyes and heart : you must pause in your condemnation or confess yourself unmoved by poetic justice.

Besides the aid which Historical Drama affords the psychologist, it has its lesson and help for the moralist too, and forces it home irresistibly. Moral maxims move few of us ; direct exhortations to virtue often prove disappointingly unavailing ; but example is still potent. Doubtless, considering the comparative scarcity of living saints and



heroes at any given moment, we do well to supplement the examples of the living with those of the dead; never, perhaps, more wisely than now. For the gallant response of the best of the nation cannot blind those of us who are addicted to meditation upon the national life to the very frequent substitution in private, public, and international affairs of the method of expediency for the principle of right. Not *Is it right?* but *Is it convenient?* has been the question so many have asked, which some ask still. We had ground for fear that the old heroic spirit was passing into the baser methods of bluff, compromise, circuitousness. Neither academic casuistry nor economic calculations will foster the heroic mood; but it can be increased, it can even be created, by contemplation of the shining virtues actually practised by our fellow-mortals. This the son of Sirach knew well when he cried:—

“Let us now praise famous men . . .

Such as did bear rule in their kingdoms, men renowned for their power,  
giving counsel by their understanding, and declaring prophecies;

Leaders of the people by their counsels, and by their knowledge of  
learning meet for the people, wise and eloquent in their instructions;

Such as found out musical tunes, and recited verses in writing.

Rich men furnished with ability living peaceably in their habitations.”

It is, of course, quite possible for historians to describe, even vividly, such men as these, but no description can fire the imagination nor stir the will to similar action as a dramatic representation, or, though a long way behind, a dramatic reading can.

Possibly Shakespeare's “Henry V” does and says things which the real Henry did not; and the historical purist may protest against our leading the young astray. This seems a pedantry, I should like to say a folly, akin to that of the people who quarrel endlessly over the precise authorship of a given writing, and appear to imagine that their doubt about its origin impairs its spiritual and æsthetic value for us. But the essential fact about a poem or play or sacred writing is that, anyhow, it has come to us through the channel of a human heart and a human understanding. If one person did not bring us this everlasting wisdom or immortal beauty another did: it is a human agent who has been employed to enrich us mortal men; and the storied undergraduate dealt well with these literary muddles when he wrote “the Iliad was not written by Homer, but by another man of the same name.” These pedantic people are guilty of a confusion of values which often issues in the total denial of some.

If the poet or dramatist occasionally embroiders or even invents right out, he does it with that inner veracity on which the great educator Fitch insists. And so, supposing that no words which Shakespeare puts into Henry's mouth issued, in sober truth, therefrom, yet (living, let us remember, much nearer to the original as he did than we) he has given us a picture of an heroic king, and the historian admits he was that. It is always difficult to choose among Henry's speeches. He is so gallant, so philosophical a king before Agincourt; so valiant a leader on the battle morning:—

Rather proclaim it, Westmoreland, through my host,  
 That he which hath no stomach to this fight,  
 Let him depart ; his passport shall be made  
 And crowns for convoy put into his purse :  
 We would not die in that man's company  
 That fears his fellowship to die with us ;—

he is so gay and yet so convincing a lover :—

I speak to thee, plain soldier : if thou canst love me for this, take me ;  
 if not, to say to thee that I shall die is true ; but for thy love, by the  
 LORD, no ; yet I love thee too :—

Yes, it is very hard to choose. But perhaps the combination of man,  
 soldier, judge and friend all in one is the most revealing instant of all.  
 Have outraged friendship and sovereign justice ever pleaded more  
 poignantly than in Henry's address to the traitor Scroop ?—

But O

What shall I say to thee, Lord Scroop, thou cruel,  
 Ingrateful, savage and inhuman creature !  
 Thou that didst hear the say of all my counsels,  
 That knewest the very bottom of my soul,  
 That almost might'st have coined me into gold,  
 Would'st thou have practised on me for thy use,  
 May it be possible that foreign hire  
 Could out of thee extract one spark of evil  
 That might annoy my finger ?

As teachers, we are thinking more of the use of Historical Drama  
 in schools than on the stage. Now I do not for one moment advocate  
 the substitution of drama for steady historical study, but I am con-  
 vinced that dramatic events, like Clarence's Dream, or the parting of  
 Charles and Strafford, or the crucial moment when Henry IV recovers  
 and finds Prince Hal with the crown, or Richard's haunting outburst—

No lord of thine, thou haught insulting man,  
 Nor no man's lord ; I have no name, no title,  
 No, not that name was given to me at the font  
 But 'tis usurp'd.  
 O that I were a mockery king of snow  
 Standing before the sun of Bolingbroke  
 To melt myself away in water drops,—

or Henry's judgment on the three traitor lords, that living, moving  
 scenes like these convert the rather dead stuff of the "history lesson,"  
 or the rather dreary grind of the History Text Book into vital reality ;  
 they bring that light which illumines the understanding, that play of  
 passion which stirs the heart, that call to effort which warms and  
 moves the will. Its succinctness is not the least of the utilities of  
 Historical Drama. The dramatist can tell us everything in the com-  
 pass of a score of words ; the historian scarcely can. It is not Richard  
 the Third's posturings to spy his shadow in the sun, nor his cynical  
 wooing of Anne, nor any of his dealings with his fellow-creatures,  
 which has won for him that response which will ever be his while any  
 person lives who can compassionate a sinner : it is his heart-wringing  
 cry in the desolation of lonely failure—

There is no creature loves me :  
 And if I die, no soul will pity me.

In that line and a half the whole tragedy of a life—cause, development,  
 climax—is for ever enshrined and crystallized.

Nor is the Use of Historical Drama exhausted with the psychological and ethical: there is its political efficacy still, using that adjective in its right sense, and not with a partisan flavour. What can tell us more of the well-meaning stupidity, the gaping vanity, the capacity for being grossly hoodwinked, than Shakespeare's "crowd" in *Coriolanus*? It is all very well to be captious, and argue that he depicted an Elizabethan crowd and put it in a classical setting. But as a matter of fact he drew just a crowd. In childhood, in those dire days when Shakespeare only meant to one, alas! alas! the stuff of an examination, one contemplated that crowd with bewildered wonder, tried to understand what it might be driving at, committed to memory notes, dry as chaff, about anachronisms and what not. When the days of generous youth dawned, and with them came academic liberalism, and a general if vague belief in "the people," whoever they may be, then that crowd in *Coriolanus* was a haunting disquietude. At last, when sober age drew on, and one put away these childish things, and Drama came to its own just by itself, shorn of all abominations like introductions, notes, and all the rest of the apparatus which brings in an income to otherwise impecunious editors, and robs youth's gingerbread of its gilt, then that crowd in *Coriolanus*—is it too much to say?—meant to us what it meant to its creator; it represented the inner truth about any, every crowd, at every time—one's self, one's wise and educated self being capable, perhaps,—who can tell?—of making one in such a queer, mixed-up, muddle-headed collection.

To forestall unnecessary criticism, it may just be stated that no nation should restrict itself to its own Drama. Though knowing and understanding other races will not solve all problems, nor meet all dangers, it will avail for some. As foreign travel helps in this way, so does the comprehension of our neighbour's Literature, Art, their intellectual effort of all sorts. Since the Drama is the most vital form of Literature, we shall not omit it in our struggle to know ourselves and our fellows. The heart of a nation is surely in its Historical Plays: here, then, the nations may meet each other's real selves, and learn that, differ though we do and shall, we have our several functions in the world-whole.

Finally, when we have pleaded for the wider, more effective use of Historical Drama in our schools and theatres, to say nothing of our studies, we must not cherish elusive, extravagant hopes. We must recognize the existence of a quite considerable number of persons whom nothing literary nor artistic touches. In between these and the sensitive who respond to the lightest stimulus there is a considerable body who will never learn from Historical Drama if they be left to their own unaided efforts. For them the Stage, and—far below it in efficacy, yet too valuable to be negligible—the reading of Plays, by a reader whose performance is above that sad average which obtains amongst us, are essential. It is not impossible to learn to read aloud passably. I know English people are obsessed with a conviction that to show



feeling is to make a fool of one's self. Surely it is ten thousand times more so to read the lines of some sublime Playwright as if they were of no more interest than a list of groceries.

I have not attempted to embark on pedagogic details, partly because the programme suggests that others may have done so, and partly because I do not believe in recipes. A History teacher who intends to include in her armoury that potent weapon Historical Drama, must be more than a dabbler in text books, or a picker-up of those unconsidered trifles, pedagogic methods. It is a great vocation to teach History well: I, for one, decline to reduce it to the cookery-book level.

I have chosen rather to take the line of national welfare; to deal with the *utility* of Historical Drama rather than with the best means of utilizing it. We seem to be at the cross roads. Is England going forward or down? Are we to be a nation, a community, in which each of us does his particular scrap in the great sum-total; or are we going to be a collection of warring "interests," hostile classes, jarring societies, where each man seeks his own advantage first, last, and all along the intervening way? A nation, I devoutly hope; a nation—to revert to Matthew Arnold's words with which I began—"controlling individual wills in the name of an interest wider than that of individuals"; and that this can be done, without Prussian tyranny, the great example of France shows. For us, men and women of this Empire, the "interest wider than that of individuals" must be the mixed polyglot life which, with our usual unawareness, we call by a name which does not fit it, but which does fire our love—England—

This royal throne of kings, this sceptred isle,

\* \* \* \*

This precious stone set in the silver sea,

\* \* \* \*

This blessed plot, this earth, this realm, this England.

Unless we are content with our present rampant excess of individualism, we must make some changes in the educational curriculum. Without excluding Science, we must include History; not partial, one-sided History, but the whole story of the entire development of a puissant race. Nor should this be the study of a few: all our citizens who aspire to genuine citizenship should be trained to look unto the rock whence they are hewn, and to the hole of the pit whence they are digged.

It is no easy task: it will need more knowledge, more judgment, more cultivation of every power than most of our teachers perhaps have hitherto exhibited. Yet, for so great an end, nothing short of rising to the height of our supremest racial possibilities, will not the teachers of History make a supreme effort?—applying their intellects, bracing their wills, kindling their feeling, straining every effort for so high a task, that

at the day of Armageddon, at the last great fight of all,

Our House stand together, and the pillars do not fall.

## FORMALISM AND EXPERIMENT.

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IN two former papers touching upon this topic the writer pointed out that there were certain ambiguities in the terms of the discussion and certain anomalies in the kind of evidence offered as a refutation of what is now generally described as the Dogma of Formal Training. A dogma, one presumes, is a truth "demonstrable and demonstrated." The formality, which is a quality of practice and not of theory, comes of our pressing the truth beyond its proper sphere; and of the attempt to account for and describe practice in terms of the dogma without modification and exception on account of other principles.

The following is the first part of an attempt to define the problem and to appraise the value of the experimental evidence offered upon it in its different aspects.

Without attempting in a short article of this kind to set forth an explicit definition of what formalism means in educational discussion, one may perhaps be permitted to indicate the height and depth of the theme by reference to certain points of view from which different groups of people see the problem. These find expression through a number of writers, whose names will help as references. The writers are mentioned as the authors of recognized authoritative opinion; each speaks for himself and others, for what one may call a school of thought in education; each speaks on formalism. Each presents the one great problem from the angle of his own experience, and by implication offers a criticism of present and past existing practices. The names are used merely to adumbrate the different shapes the problem takes.

(a) In the first place there is that criticism of formalism—an unremitting hostile criticism—embedded in the writings of Mr. Edmond Holmes. I refer readers particularly to his paper in the current number of *The Nineteenth Century* (October), entitled "Ideals of Life and Education." Formalism for Mr. Holmes is summed up in the homely phrase, "Do as you are told"; and appeal is made from that to the philosophy of "Live and let live." Coercive discipline, dogmatic instruction, aggressive egoism are the features of formalism. They bear an evil fruit; and the writer appeals for a system in consonance with the national ideal of "live and let live" that shall foster, or rather set free, the instinctive and intuitive side of our nature; for this and what spring from it—certain moral senses and moral sensibility—are killed by formalism. The thesis is illuminated by an exposition of the effects of German education upon its people. The working of that system and its obvious results may be regarded as a huge experiment in formal education.

A similar conception of the problem of formalism is to be found in the Rev. W. Temple's presidential address to the Workers' Educational Association. He, too, finds the illustration of his principle in German

conduct, and turns his discourse on the distinction between the conscious and subconscious mind. "It is just here (i.e., in intellectual training), and here alone, that German education has been strong; it has not aimed at the subconscious mind as ours has done—moulding the whole personality by the silent appeal to imagination and sympathy which a common tradition, embodied in a social life, is alone able to make. The German system has dealt almost exclusively with the conscious mind, appealing almost solely to memory and intellect."

(b) The second formulation of the problem may be conveniently associated with the name of Professor John Dewey. Mr. Holmes summarizes formalism under the phrase, "Do as you are told." Professor Dewey may be said to summarize it in "One thing at a time"; and working in the field of the growth of social experience—and all conduct for Professor Dewey has a social implication—he insists on the formality of the adult point of view and of the academic arrangement of knowledge for the growing mind.

(c) A third formulation of the problem is to be found in the long-standing controversy between the advocates of *real* studies and the *grammarians and verbalists*. Every realist in the history of education, from Comenius—and before him—downwards to Dr. Armstrong, who advocates *Heurism*, and Mr. J. G. Legge, who writes about "the thinking hand," is the critic and enemy of formalism. Whatever else may be therein this is the main topic of Professor John Adams' much-quoted and valiant chapter on "Formal Education" in his "*Herbartian Psychology*."

(d) There is a further view of the vital aspects of the question. "Stated simply, the theory known as 'formal discipline' declares that mental power, however gained, is applicable to any department of human activity." In the opinion of many this claim is false; and they proceed to refute it by an appeal to experiment.

The problems of formalism, as indicated above, are set out in the barest outline. I admit their indefiniteness and lack of precision at once; but as they are developed they sweep together the many and varied aspects of the whole subject. They are cognate, and opinion on one side or on the other of any one of them will commit us to a standpoint in regard to the others. But as they stand they classify the different appearances of the whole discussion in a way that sets a series of questions to the experimental results. Have these results any light to shed upon the questions of theory and practice, of curriculum and method implicated under (a), (b) and (c)? It seems to be quite obvious that there was no need for such elaborate labour as Dr. Sleight, for example, put himself to in order to answer the question quoted from him under (d). If that is all formal training means, then formal training is possible. It is mere quibbling to deny it. The only justification of the experiments is the attempt to measure the "amount of transference." That, as yet, is far from being successful or even



persuasive. For the rest, the experimental results offer no evidence of a reliable nature that can be used in the development of the topic of formalism as conceived fully under (a), (b), (c) and (d).

The juxtaposition of (d) with (a), (b) and (c) may appear absurd and forced. But it is not so, for some who take their stand upon what they declare to be the experimental results, or proper inferences therefrom, have ventured upon conclusions upon problems which are the natural issues of the unfolding of (a), (b) and (c). Some, for example, believe that the facts as elicited by experiment make psychologically impossible anything of the nature of "indirect" or suggestive teaching<sup>1</sup>; appeals to the subconscious mind, and so forth, they regard as so much fustian. Others declare that "one thing at a time," i.e., piecemeal training, has nothing to do with the question of formal training.<sup>2</sup>

The assertion of the possibility of vicarious experience, of vicarious training, is based upon a wide-based empirical law, viz., that thinking about or doing any one thing is thinking about and doing another in so far as the two are alike. And the smallest philosophy would add that the human mind has remarkable powers of making one thing like another, i.e., like something that it already has had experience of. It is impossible—exceptions always amount to a paradox—to learn about a thing without learning from it. Everybody might agree upon so much—formalist and freeman—though, as I have pointed out above, some look upon the second form of the proposition with suspicion. No experimentation is needed either to establish or refute it. Everybody has made innumerable experiments in it in his own life. Apart from experiments of this personal kind, it may very well be the proper ambition of the experimental psychologist to measure the amount of transference, to adopt the jargon of this contention, from one kind of experience to another. We may conveniently at this point meet and dismiss the attempts to give this common philosophy exact mathematical form; to measure a movement in mental development, and by and through the figures representing the movement, which is a mental fact, to give precise determination to this descriptive principle. These numerical results, chastened by approved statistical devices for eliminating the chances of error from various sources, are taken as representing the effect of one kind of experience upon an essay in another kind. The figures, like the cuckoo, tell no lies. And they can be shown, it is hoped, to be the resultants of a number of mental functions which may be regarded as units. This sporting attempt can claim but little success. It goes without saying it would be extremely serviceable for us to have a means of measuring of the kind aimed at. But for the present it

<sup>1</sup>Dr. F. H. Hayward, in his "Day and Evening Schools," pp. 221-2, takes Sir Henry Newbolt to task for believing that the boy will see any parallel between "the rigour of the game" and the conduct of life unless the parallel is directly indicated to him. I admit at once that some of the claims put forward by the advocates of games are extreme and uncritical. But Dr. Hayward's plaint seems to err on the other side. Plainly, it means that the boy is incapable of seeing an analogy and applying it. He must be directly instructed to see it. But there is an analogy between conduct in games and conduct in life. At any rate the poet has created a very convincing one. Why not the boy?

<sup>2</sup>Spearman, *Journal of Experimental Pedagogy*, March, 1914.

remains unfruitful. Its exponents appear to be undecided as to what coefficients of correlation imply<sup>1</sup>, and whether that statistical device does really overreach the difficulties in the measurement of mental acquirement owing to the absence of anything of the nature of real norms of acquirement in any single human performance. But this attempt to account for the process of training in terms of number deserves to be distinguished from the bulk of indifferent matter that has been written under the heading of experiments in formal training, wherein the numerical results are uncritically got and used to give point to some distraught theory of experience. The attempt I here refer to commits itself to no theory of knowledge, indeed it expresses a dislike for such theory beyond the fact that we are mentally compact of a central factor denominated "general ability" and a number of mental qualities which are specific in their functions. With this inquiry we are not here concerned.

The experimental enquiries referred to may be regarded as falling apart into two classes, viz., those wherein the observers were sufficiently mature and trained to introspect the working of their own minds, and the so-called "group" experiments where no introspection was recorded. So far as individual reports are concerned this is a cross-classification. Some, to the confusion of their own results and theory, employ a sad mixture of statistics and introspection. The former group of studies constitute directly a psychological inquiry. They embody descriptions of change in consciousness under known circumstances, introspection under experimental conditions. The explanation of the described changes involves the authors in psychological theory. The second purports to be an inductive enquiry; an attempt to measure *ab initio* the influence of practice in one task upon the attempt at a second. Series of figures are produced which represent, we are called upon to believe, changes in the mental powers of observers in the particular tasks. Those changes are taken to be directly attributable to experiences which the observer has undergone between two equal tests. The figures are then used, in conjunction with introspections either of the observers or of the experimenter himself, to justify what may be called a pre-conceived theory of knowledge.

Of the former group of studies it can be said that the figures are of secondary importance. Some kind of satisfaction may be derived from experimental conditions; and this satisfaction is heightened when introspection reveals a mental ingenuity that has made use of some striking device, or caught a suggestion from some fleeting image, or indicated a sense of confusion and consequent inhibition of thought, when a mode

<sup>1</sup>See Hart and Spearman, "General Ability," *British Journal of Psychology*, March, 1912. The writers remark (p. 77) that the current modes of interpreting correlations are suffering from a universal confusion between general and specific ability. For instance a correlation of .49 is found between the power of visualizing pictures and that of memorizing sentences. "Most psychologists would conclude that .49 represents the extent to which the process of interpreting pictures involves the exercise of memory." And the writers go on to show that this is not so. The coefficient, it appears, "is no indication at all of any specific relation between interpreting pictures and remembering, but of the mean degree in which these two performances depend respectively on general ability."

of thought or action that has been successful in one kind of learning, and is now high in consciousness, is found to be less successful in another kind. Such we saw were rhythm, transferred from the learning of poetry, successful in dealing with nonsense-syllables, wasteful and futile when applied to logical prose. Again, in a number of experiments the form of sequence of a series of tones or colours was a useful clue in dealing with another series of colours or tones. The introspections, with notable gaps, confirm the numerical change in the test results, whether of improvement or retrogression. They give us, vague and incomplete as many of them are, first-hand confirmation of a psychological truth that needs no elaborate experimental conditions for its investigation, but which is exemplified every hour of the day in the life of everybody who cares to reflect upon his conduct, viz., the mind in making a new judgment impresses into its service, often in the most ingenious way, the dispositions and acquirements of past knowledge. They confirm transference, if any confirmation were needed. They give descriptions which we may regard as typical of the formation of experiences and of the acquirement of mental power over new content; or, better, of the creation of new content. They show that it is *not* any single factor, which analysis may discriminate as being common to two states of consciousness or two pieces of knowledge, that is alone accountable for the change from one to the other. Three further remarks appear to be worth while about them. Firstly, that it is by no means the experience gained in the practice period, i.e., from the task set for training between two tests, that is, solely used in transfer.<sup>1</sup> In some cases it is practice experience that gives the suggestion of method used in the test. In others, what is learnt in the practice is a source of confusion. And there is no accounting for the cases except in the whole mental history of the observer. And, secondly, how that works is beyond the reach of introspection. A most competent observer, practising upon himself, remarks that introspection gives no clue to changes in the mode of perception: "The very mode of conscious activity underwent a change. The observer came to stand on a different level of perception after practice, but the process by which the change of level had been effected can only be inferred. It could not be observed even where the observer was looking forward to the change"<sup>2</sup> Thirdly, it appears that exercises which are new and unusual, but which may be made to engage the interest and energy of the observers, are connected with pronounced numerical changes. This is particularly the case with exercises upon disjointed material that has to be committed to memory. It is this novelty which accounts much more for signs of pronounced transference than "degree of similarity," which is refuted too frequently in the results to be considered a reliable explanation. This group of studies, then, takes us no further than the exhibition of a number of definite examples of transference. Such experiments are works of supererogation, for everybody has made such experiments repeatedly

<sup>1</sup> See Fracker, *passim*.

<sup>2</sup> Judd, "Practice and Perception of Illusion," *Psychological Review*, Vol. 9.



for himself; and biography is packed with evidence of transfer, often on a wider and more striking scale, under conditions quite as exact and recorded by more competent observers than were employed in the bulk of these experimental investigations.

We may now proceed to consider these experiments as an inductive inquiry. Before, however, examining in detail the conditions under which the evidence they offer is forthcoming, it will be useful to review what answers this evidence has to some of the claims which, it is alleged by the experimenters, educationists have been used to make under a "formal training" licence.

Vicariousness is obviously a matter of degree. Yet it has been asserted by a number of writers that one of the results of these experiments is to refute the notion held by old-fashioned people that training by means of some particular subject, Latin is frequently cited, is a better means of training for some other task than a direct acquaintance with the task itself. It is not easy to believe that anyone in his senses ever asserted anything of the kind; for it surely carries with it the implication that he would deny that one thing differed from another. Possibly this is one of those odd translations of doctrine which appear necessary to experimenters. It appears to be a parody of what we may conveniently here call the puritanical—tyrannical might be nearer—doctrine which colours a good deal of our national and domestic outlook. The puritans have said very frequently, and are likely to go on saying, that of two kinds of experience the one is a better training for a third which the pupil may possibly have to meet later on than the other. For instance they may say that the best reason for teaching Latin is that its acquirement is a matter of "stupendous difficulty"; meaning that if the pupil can summon energy, intellect and will sufficient to master Latin, he will be able to master any other branch of human experience when it has to be met. They may be wrong in this; the experiments do not show that they are. cursory observation may reveal instances that refute the theory. But the puritan has not said that learning Latin is a better way of learning law than the study of law itself, or for banking than banking itself, or for shopkeeping than shopkeeping itself. They may go so far as to speak of "mental and moral acclimatization"; a form of transference that every student has direct experience of, and that no experimentation can touch, and of which "transference through similar elements" is the feeblest description. The one common and persisting element is the personality of the learner. Oddly enough some of the experimental figures can be turned to show that *indirect* is better than direct training.<sup>1</sup>

Even with the more cautious exponents of specificism this assumption is postulated against the uncritical. The pathetic belief in and reliance upon the faculty psychology, so it is said, leads them to believe in the possibility of complete substitution of one experience for another

<sup>1</sup> See, e.g., Sleight, Table III, Poetry Test, I don't doubt Dr. Sleight's explanation—but, the figures!

—"transfer of function equally in all directions" is the name of the offence; a rhetorical phrase transferred from mechanics, and in its new setting functioning most indifferently. This description of the claim for vicarious training is in its nature a question-begging tag, for it takes its ground on a mechanical and atomistic interpretation of experience without any attempt to justify itself. Whatever plausibility it has comes directly from the fatal facility we have of resorting to spatial metaphors to describe mental experience, an offence one degree worse than resorting to faculty and habit. Indeed, the faculty psychology is a modest confession of ignorance of mysteries compared with this quack psychology of transference equally in all directions. But, taking the description for what it is worth, assuming that it has a meaning appropriate to this question of training, it may be said that experiment confirms the protest. From first to last experimental records go against anything of the nature of "transference equally in all directions."

There is a refinement on this position, viz., that while transference equally in all directions must be considered as absurd, we must still regard it quantitatively. Transference is in proportion to the number of elements which are common to the two experiences between which transference takes place. This is our empirical law, that thinking or doing one thing is thinking or doing another in so far as they are alike made formal, dressed out to impose upon us. But there is no evidence that can be given the mathematical form necessary for its proof (vide article in this Journal, March, 1915). There is a general tendency to a conciliation between what the results suggest and our expectations of what they ought to show. At best it may be put that the evidence of the experiments confirms the empirical law, with some important exceptions. But the evidence is of no greater value than the incidents of common experience revealed to the cursory observations that compel the empirical generalization. The exceptions, i.e., the breaks in the arithmetical progression of the numerical results, throw us back on an analysis of the particular experiences dealt with in the experiment. The data for this analysis lies in the introspections of observers and experimenter, and in the latter's account of the conditions under which the experiments were carried out. As a result of this analysis, subsequent to a contradiction of what we believe to be our legitimate expectations, we are driven to recognize the principle that an *ex parte* analysis of the experience of any individual may be wide of the mark of actuality. This principle, upon which the concepts of individual personality and personal idiosyncrasy are based and vindicated, is always the main ground of any proper refutation of formalism; for formalism is always, in some shape, an attempted violation of that principle. Teaching becomes formal as soon as it attempts to force the personality of the instructor upon the instructed. "Dogmatic instruction and coercive discipline" are the features of formalism—the features of orthodox educational method; the position I have indicated under (a) with Mr. Holmes' name, and (b) with Professor Dewey's. The experimental

results confirm our belief in the uniqueness of personality—which appears to be much like setting the sun right by the kitchen timepiece; and warn us again and again of the incalculable in mental behaviour, even in the trite tests therein prescribed. They do this much more than give a justification of any transference in proportion to the number of common elements.

As far as the numerical results take us we are exactly where we were before experiment of the type dealt with here was tried. The empirical law is not verified mathematically, nor is it refuted. But in the attempt to explain the numerical results, experimenters are forced to propound theories of knowledge which are meaningless or which allow the possibility of vicarious training in its widest form. Professor Thorndike's theory of specific habits amounts to no more than a duplication of faculties, and <sup>1</sup>Dr. Sleight's "similarities of procedure" and "concepts of method" are identical with the claims of the formalist that there is a possibility of the complete substitution of experience.

Before leaving this general review of the application of the numerical result, a protest will not be out of place. It is against the arrogance that distinguishes much of the writing produced from the experimental point of view. Experimenters in this field assume much too readily that their results have been an influence of some moment in that movement of philosophy that emphasizes the specific character of experiences. In one case at least a revolution of theory is spoken of—and presumably of practice—as being the natural consequence of these experiments, with a side-glance at Kant's great figure in the beginning of the *Critique*, whereby he illuminates the point of view of the critical philosophy by the analogy of the Ptolemaic and Copernican cosmologies. The bulk of the work the present writer has come across is the merest by-product of that movement in philosophy. The experimenters are as little free from bias and formalism as are the gentlemen in possession. No revolution of training, of which the experimenters would have themselves thought the heralds, is likely to come from such ambiguous results and unpersuasive arrangements. No parallel between the influence of discovery in mental economy, at any rate so far as method in instruction is concerned, and in physical science is worth consideration.

Yet further they assume that even if we must regard the discreet acts in life which we discriminate as separables, as more specific than another generation held them to be, they have destroyed the case for the value of the traditional curriculum. They forget that they are no nearer seeing either (*a*) which specific tasks are of the greatest value here and now to any pupil, or (*b*) which specific tasks are likely to be of most use in after life, i.e., in the life for which schooling is a preparation, a view of schooling they share with those they criticize. The so-called formalist may have been wrong in insisting upon a cleavage between school-life and life subsequent to school. His theory of mental and moral thrift

<sup>1</sup> This Journal, June, 1915.



may be open to criticism as emphasizing unduly some characteristics of the process of growth and training at the expense of others. The analogy of school life as a mental and moral savings bank, or as a period of probation and tribulation, is limited in its value and an unfortunate choice as a justification of practice. Yet it is hardly as hopeless as the notion that experiment of the kind that has been undertaken has disproved the assumptions that lie behind the practice of centuries in training—for this is what is claimed as following from these lists of ambiguous figures. The hope that comes of faith in the former has at any rate carried many a pedagogue through his pilgrimage with solace to himself and profit to his boys. This theory of specificism makes training impossible. And it is doubtless this fact, subconsciously held, that accounts for the modesty of the proposals so far forthcoming from them to revise the curriculum.<sup>1</sup>

(To be continued.)

<sup>1</sup>There is a notable exception to this. Dr. Sleight has applied his work to questions of curriculum in a book which is no doubt reviewed in another part of this Journal (Sleight, "Educational Values, &c.") Whatever may be thought of the generous pabulum which he therein demands for the child in the elementary school, it appears to me that Dr. Sleight justifies it by reference to principles that are not directly apparent from his own experiments. Those experiments take him to the conclusion that "the most usable common element is to be found in the form or method of learning" (p. 81), and he proceeds to tell us that "No true concept of method, while it is in the early stages of its formation, attached to and strongly coloured by the subject matter amid which it arises, is capable, in its later and more abstract stages of complete detachment from this subject matter, and can exist in entire independence of it" (p. 98). This appears to be a statement of the principles of the extreme formalist. Now the passage italicized—not for emphasis but for reference—indicates a principle which is not exemplified in his experimental inquiry, a principle which appears again in the summary to Chap. V. on "Method and Ideals." In that summary Dr. Sleight claims that his investigation has made three points clear, viz.:—

- (1) That judgment cannot of itself provide those factors of experience that come only through practice; that abstract notions cannot take the place of perceptual experiences; that a concept if it is to be anything other than a bare mental symbol must cover a wide factual basis.
- (2) That genetic psychology emphasizes the limitations of the child in the formation of concepts that are in any serious degree abstract.
- (3) He points out the importance of the almost subconscious absorption of principles of method and the persistent efforts of the mind, even the young mind, to transfer them.

It is upon these principles that Dr. Sleight proceeds to argue most admirably for his curriculum. But they are not the revelations of his experiments at all.

A STUDY OF CHILDREN'S VOCABULARIES. II—*contd.*

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TABLE II.  
ANALYSIS OF NOUNS.

	J.		D.			H1.			H2.		K.	
	Total	Per cent.	Total	Per cent.	Per cent. of J.	Total	Per cent.	Per cent. of J.	Total	Per cent.	Total	Per cent.
Home Environment—												
Social .....	14	1.3	12	2.7	86	4	2.3	28	...	...	11	3.4
Food and Drink .....	87	8.6	64	14.3	73.5	23	13.4	26.4	...	...	18	5.7
Person and Dress ...	129	12.7	92	20.5	71.3	42	24.5	32.5	...	...	43	13.6
Play, Games, &c. ...	39	3.8	23	5.1	59	6	3.5	15.4	...	...	17	5.6
Miscellaneous .....	219	21.6	125	27.8	57	52	30.2	23.7	...	...	75	23.7
Total .....	488	48.2	316	70.4	64.7	127	73.7	26	26.4	70	16.4	52
Outside Environment—												
Social .....	38	3.7	6	1.3	15.8	2	1.1	5.3	...	...	30	9.5
Animal .....	155	15.3	56	12.5	36.1	23	13.4	14.8	...	...	37	11.6
Plant .....	49	4.8	17	3.8	34.7	5	2.9	10.2	...	...	8	2.5
Physical .....	37	3.6	12	2.7	32.4	4	2.3	10.8	...	...	7	2.2
Miscellaneous .....	166	16.4	26	5.7	15.5	5	2.9	3.1	...	...	54	17.3
Total .....	445	44	117	26	26.9	39	22.6	8.7	99	26.2	136	43
General and Abstract	79	7.8	16	3.6	20.2	6	3.4	7.6	14	3.7	16	5
Total .....	1012	...	449	...	44.4	172	...	17	377	...	316	...

Table II is the first of the Tables giving a more or less detailed analysis of the words occurring under the head of the more significant parts of speech. The general principles upon which it is arranged are evident. The nouns are classified into three main classes, nouns belonging to the home environment, nouns belonging to the outside environment, and general and abstract nouns. Then the first two are further subdivided into divisions which mostly explain themselves. The miscellaneous division under "Home Environment" comprises mainly the names of household utensils, articles of furniture, and the like; the miscellaneous division under the second head comprises mainly the objects of the streets and roads; in the case of J., also of the sea. In the case of K, the home environment includes also the environment of the kindergarten.

The first point calling for particular notice is the distribution of the words. In the case of H1 we have 127 words, or 73.7 per cent of the total number of nouns, belonging to the home environment, while 39 words, or 22.6 per cent, belong to the outside environment, and only 6

words, or 3·4 per cent, are general or abstract. In the case of D. the home environment gives us 316 words, but the percentage falls to 70·4; the outside environment gives 117 words, a percentage of 26; and the general and abstract words are 16, a percentage of 3·6. In the case of J. the percentage of words from the home environment has fallen to 48·2, while the percentage of words from the outside environment has increased to 44, and of general and abstract words to 7·8.

Comparing the other two vocabularies with these, we find, in the case of H2, a close approximation to D., if we consider the respective percentages; while K. shows us a vocabulary resembling that of J., except for the fact that general and abstract terms are much fewer. In the case of K. it must, however, be remembered that the home environment words include those belonging to the kindergarten environment. But for these the representation of the home environment would be comparatively meagre.

It must also be noted that, as regards the abstract terms, in no case are they used in a really abstract sense. Thus "beauty," with J., occurs in such a phrase as "What a beauty!" Nevertheless, this division of the nouns may be taken as in a certain measure symptomatic of real mental development.

When we consider, in the second place, the distribution of words belonging to each environment, we also find interesting differences between the vocabularies, these differences being due partly, no doubt, to differences in the direction of interest, but mainly to differences in extent of environment with which contact has been made. Thus, as regards the words belonging to the first three subdivisions of "Home Environment," D. has already reached a considerable proportion of J.'s vocabulary, 86 per cent, 73·5 per cent, and 71·3 per cent respectively; and H. also reaches a percentage very considerably above his general percentage of J.'s nouns, 28 per cent, 26·4 per cent, and 32·5 per cent, as against 17 per cent. A very different state of matters is seen when we examine the "Outside Environment" words. The highest percentage of J. is reached by both D. and H. in the case of the animal subdivision, but that percentage is only 36·1 per cent for the former, and 14·8 per cent for the latter.

Turning to K., we find that the "Food and Drink" and the "Person and Dress" subdivisions of the "Home Environment" section, with the "Animal," "Plant," and "Physical" subdivisions of the "Outside Environment" section, show marked deficiency of words, even when compared with D., and much more so when compared with J. On the other hand, the "Miscellaneous" subdivision of the second section, that is, words belonging to the general outside life of the street, yields a higher percentage of words in the case of K. than in the case even of J., and double as many words as in the case of D. The "Social" subdivision with K. also shows a better percentage, though not quite so many words, when compared with J., and far surpasses both D. and H.



All these facts serve to confirm our conclusions as to the exceedingly important part played by a child's environment in the development of its vocabulary, more especially as far as the nouns are concerned.

TABLE III.  
ANALYSIS OF VERBS.

	J.		°D.			H1.			H2.	
	Total	Per cent.	Total	Per cent.	Per cent. of J.	Total	Per cent.	Per cent. of J.	Total	Per cent.
Action of Self—										
Trans.—Personal Object ...	21	7.2	14	8.6	66	8	10	38.1	...	...
Trans.—Non-personal										
Object ... ..	114	39.4	66	40.7	57.9	36	45	31.5	...	...
Intransitive ... ..	45	15.5	31	19.1	68.8	21	26.2	46.6	...	...
Total ... ..	180	62.1	111	68.5	61.6	65	81.2	36.1	105	71
(Mental)	(20)		(12)			(3)				
Action of Others—										
Trans.—Self Object ...	25	8.6	19	11.7	76	5	6.2	20	...	...
Trans.—Other Object ...	18	6.2	5	3.1	27.7	...	...	...	...	...
Intransitive ... ..	14	4.8	4	2.4	28.5	2	2.5	14.2	...	...
Total ... ..	57	19.6	28	17.2	49.1	7	8.7	12.2	24	16.2
Action of Animals & Things—										
Trans.—Self object ...	5	1.7	4	2.4	80	1	1.2	20	...	...
Trans.—Other Objects ...	...	...	...	...	...	...	...	...	...	...
Intransitive ... ..	27	9.3	4	2.4	14.8	...	...	...	...	...
Total ... ..	32	11	8	4.9	25	1	1.2	3.1	7	4.7
Impersonal, Neuter, and										
Auxiliary ... ..	21	7.2	15	9.2	71.4	7	8.7	33.3	12	8
Total ... ..	290	...	162	...	56	80	...	27.6	148	...

Table III gives an analysis of the verbs. The classification of the verbs was found to be a very difficult matter, but ultimately the scheme as shown was adopted. Other schemes were, however, tried, generally with the result that they failed to bring out any striking difference between the different vocabularies. The classification given shows very marked differences. Generally speaking, we may say that the younger a child is, the more self-centred are his interests, if we may interpret the differences shown in Table III in that way. This characteristic is even more evident when we take the verbs with self either subject or object. In that case we get for J. 210 verbs, or 72.4 per cent of the whole; for D. 134 verbs, or 82.7 per cent of the whole; for H1 71 verbs, or 88.7 per cent of the whole; and for H2 118 verbs, or 80 per cent of the whole.

We have not given an analysis of the verbs in K. vocabulary, because there did not seem to be anything to be gained by such an analysis. The vocabulary is essentially a composite one. The only other explanation which seems necessary is with respect to the manner

in which verbs, which might fall under two or more heads, were treated. In such a case, the verbs were classified according to their simplest or most frequent use. In all other respects the table appears self-explanatory.

TABLE IV.  
ANALYSIS OF ADJECTIVES.

	J.		D.			H1.			H2.	
	Total.	Per cent.	Total.	Per cent.	Per cent. of J.	Total.	Per cent.	Per cent. of J.	Total.	Per cent.
Demonstrative & Pronominal.	17	8.3	16	15.7	94.1	5	11.1	29.4	13	14.6
Number and Quantity ...	37	18	22	21.6	59.5	16	35.6	43.2	17	19.1
Position in Space or Time ...	10	4.9	2	1.9	20	...	...	...	1	1.1
Colour ...	14	6.8	10	9.8	71.4	4	8.8	28.5	7	7.8
Quality ...	127	62	52	51	40.9	19	44.4	14.9	51	57.3
Total ...	205	...	102	...	50	44	...	22	89	...

Table IV shows the analysis of the adjectives in all the vocabularies except K., that being omitted here also because of its composite nature. This table shows two interesting features. In the first place, expansion of the adjective vocabulary is mainly due to increase in the number of so-called adjectives of quality. This must be regarded as both a mental growth symptom, and a result of a widening environment. It is obviously the latter, but we had rather interesting evidence that it is also the former. A few days after the period of the investigation, we tried to make clear to D. and J., by explanation and by examples, the meaning of giving the opposite of an adjective. Each was then asked for the opposites of certain adjectives. J. immediately saw what was wanted, and gave opposites unhesitatingly, and almost without mistake. Indeed, he got quite interested in the game, and continued for several days afterwards to make discoveries in opposites. On the other hand, all efforts to make D. understand what was wanted completely failed, but six months later, when she was tested again, opposites were got quite readily.

In the second place, certain groups of adjectives may come as it were with a rush. Examples are demonstrative and pronominal, and colour. These might therefore also be regarded as more or less symptomatic of mental development.

The other tables do not call for much remark. As a rule, they merely confirm results obtained by other investigators. In the case of the pronouns, relative pronouns are the latest to make their appearance, and the development of demonstrative and distributive pronouns, as well as personal pronouns, especially the first person, seems to mark distinct stages of mental growth. Relative pronouns and subordinating conjunctions naturally imply some complexity of sentence structure. Hence their lateness.

TABLE V.  
ANALYSIS OF PRONOUNS.

	J.		D.			H1.			H2.	
	Total	Per cent.	Total	Per cent.	Per cent. of J.	Total.	Per cent.	Per cent. of J.	Total.	Per cent.
Personal ... ..	18	54.5	17	60.7	94.4	7	63.6	38.8	12	52.1
Demonstrative & Distributive.	7	21.2	5	17.8	71.4	1	9	14.2	5	21.7
Indefinite ... ..	5	15.1	4	14.2	80	3	27.2	60	5	21.7
Relative and Interrogative ...	3	9	2	7.1	66.6	...	...	...	1	4.3
Total ... ..	33	...	28	...	84.8	11	...	33.3	23	...

TABLE VI.  
ANALYSIS OF ADVERBS.

	J.		D.			H.		
	Total.	Per cent.	Total.	Per cent.	Per cent. of J.	Total.	Per cent.	Per cent. of J.
Time ... ..	14	25	8	22.2	57.1	4	23.5	28.5
Place ... ..	21	37.5	15	41.7	71.4	10	58.8	47.6
Degree ... ..	11	19.6	9	25	81.8	1	5.9	9
Manner ... ..	10	17.8	4	11.1	40	2	11.7	20
Total ... ..	56	...	36	...	64.3	17	...	30.3

TABLE VII.  
ANALYSIS OF CONJUNCTIONS.

	J.		D.			H.		
	Total.	Per cent.	Total.	Per cent.	Per cent. of J.	Total.	Per cent.	Per cent. of J.
Co-ordinating ... ..	5	31.2	4	50	80	2	100	40
Subordinating ... ..	11	68.7	4	50	36.3	...	...	...
Total ... ..	16	...	8	...	50	2	...	12.5

With regard to the adverbs, it would seem that adverbs of place make their appearance first, and that adverbs of manner are latest. Our Table VI suggests also that both adverbs of time and adverbs of degree mark definite stages in development.

#### GENERAL CONCLUSIONS.

It is not very desirable to be dogmatic concerning the results of an unfinished investigation, but it may be well to mention the conclusions which are indicated by the results so far obtained. We seem to be led to three very definite conclusions, and the third is by no means unimportant for the psychology of child language.

1. In the first place, three factors can be traced influencing a child's vocabulary—the environment of the child, the direction and development of its interests, and its mental growth or its ability to take a mental grip of its world. Its environment will affect mainly its nouns, the direction of its interests will be best seen in its verbs, and its mental grip will be best shown by its pronouns, adverbs, prepositions, and conjunctions.



2. In the second place, there are in the child's vocabulary definite marks of definite stages of mental development. One such mark is the first personal pronoun. Another is the adverb of degree. Still another is the subordinating conjunction.

3. In the third place, we would suggest, though rather hesitatingly, that our results show the necessity of some revisal of our opinions regarding the nature of the earliest child language. It has been almost universally held that at first the child's vocabulary is composed mainly of nouns. In discussing the discrepancy between our results and those of Dr. Boyd, we have already pointed out the difficulty to which this leads. But are we compelled to accept the view that the child's earliest vocabulary is mainly nouns? Is there even conclusive evidence that the noun is the first element of language to appear?

In order to answer these questions we must first of all define language so as to have some criterion by which we may be able to identify its beginning. The only satisfactory definition would appear to be in terms of its psychological function, that is (following Stout), as an "instrument of conceptual analysis and synthesis." Such a definition excludes all sounds merely expressive of some feeling or emotion, all merely imitative sounds, and all sounds which are merely associated with a certain experience as a whole. These form the material out of which, it is true, the child develops language, but these do not constitute language. If we do not limit language in this way we must credit many animals with the power of speech.

Now, in the passage of the child from the merely reflex or instinctive cry, expressive of some feeling, to human language, by which meanings in the form of relations between elementary concepts may be expressed or implied, there are three stages which are sometimes well-marked, at other times very difficult to distinguish except theoretically. The first stage is the purely imitative, or what we might call the parrot, stage. The second stage is the stage at which definite sounds are associated with definite objects, and this, which may be regarded as the analytic preceding the synthetic stage, passes over into the third stage of language proper.

The first stage presents no difficulty, but the second stage does. Most parents, when the child arrives at this stage, encourage the association of sounds with experienced wholes or percepts, teaching the child the names of objects. But these name sounds cannot be called nouns. When, however, language proper does begin, the child may have a considerable stock of such name sounds, which only gradually take their place as nouns in the real vocabulary, but which nevertheless give the appearance of a great predominance of nouns.

J.'s case will, perhaps, throw some light on this matter. As we have already mentioned, he began to use language at about sixteen months, and when he did begin he began with real language. From

about the middle of the fourteenth month we have record of a phenomenon, which interested us very much, but which we could not quite explain. At that stage one of his chief delights was to get someone to name to him the various objects in the room. So far as we knew, he never tried to say the names, and was quite satisfied with hearing them, but he would point to object after object, again and again, passing to the next when the name was spoken. Here we obviously have a case of the interest which would determine the learning of sounds associated with objects. Had J. begun at this time to say the words, we should not have been able to state definitely at what period real language made its appearance. Unfortunately we have no record of his earliest vocabulary. Perhaps some future observer who has an opportunity of studying a case similar to J.'s, will supply this deficiency. Until we have some such evidence it is quite impossible to say what the exact nature of the child's earliest real language is as regards the relation of nouns to verbs, for, where there is a more or less artificial development of name sounds prior to real language, it is exceedingly difficult to distinguish clearly the earliest attempts at real language.

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#### SPECIAL NOTE.

FOR fear the article (on p. 204) on "Geography in the Final Examination" should be thought to concern only lecturers in a special subject, it may be well to point out that it records the beginning of a movement of great importance to all departments of Training Colleges. The Board of Education have, indeed, already indicated that they may, from time to time, propose conferences with the teachers of other subjects, similar in scope and purpose to the one described in Dr. Unstead's report. We understand that the Board's letter conveying this information is to be considered by the Committee of the Training College Association, who report on the questions involved to the Annual General Meeting in January. There can be no doubt that the Association will cordially welcome a departure which promises to bring the teaching and examination of students in Training Colleges into close and fruitful relations. The questions to be decided must be mainly questions of machinery.

## CHARACTER: ITS ANALYSIS AND MEASUREMENT IN C.G.S. UNITS.

By HUGH RICHARDSON, M.A.

### ANALYSIS OF CHARACTER IN TERMS OF HEREDITY.

First, can character be analyzed? Is it a unit, unique, an element indivisible, or is it an aggregate, a total, an integral? Before answering, let us consider the abstract possibility that anything may be both a unit and also an integral.

For instance, the unit 1 is equal to the integral total

$$\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + +$$

*ad infinitum*. Nor is this the only infinite series that adds up to 1. We may transform the series, and write  $1 = \frac{2}{4} + \frac{4}{16} + \frac{8}{64} + \frac{16}{256} + +$ , it is only the same series disguised. Or we may find other series, such as

$$1 = \frac{1}{3} + \frac{2}{9} + \frac{4}{27} + \frac{8}{81} + +$$

$$\text{or } 1 = \frac{4}{5} + \frac{4}{25} + \frac{4}{125} + +$$

Why these series? Because character is inherited from parents. A boy's character contains parental contributions. A knowledge of them is of the greatest practical use to the schoolmaster. Unfortunately, very few of us have taught not only the boy but also his parents when they were at his age. I think no such cases have come under my personal experience, but I have been fortunate in several cases to have had before me the sons of old schoolfellows, and it has been a great convenience to know beforehand how they are likely to behave.

Unfortunately, the whole facts are beyond our personal observation. In the garden I am growing columbine flowers from seed saved with my own hands for some six generations; but in the school we have only a momentary view, hardly more than an instantaneous photograph, of one phase of one individual in the great procession of human generations. We seldom get to know a boy's grandparents: never his grandchildren. Hence we are apt to get the false idea that the individual is altogether unique, atomic, and indivisible, instead of regarding him as a momentary efflorescence at one of the knots in a web of continuous life-streams, to be compared to the efflorescence of a strawberry plant at a node on the runner. If the Apostles' Creed were redrafted by the apostles of modern science one clause would run: "I believe in the immortality of the germ plasm." Another teaching we glean from what the Mendelists have proved about the  $F_1$  generation. Do not despair about your children if they do all the silly things that you once did. Wait until you see the characters of your grandchildren.

In the limitations of personal experience we have to trust to record. School marks are records. The data we require might be found in any school which has been used for generations by the same families.



We have some prejudices as to the probable form of the ancestral integral. Galton has shown (see "Natural Inheritance," p. 133) that filial regression is about  $\frac{2}{3}$  for physical characters. Pending evidence we may suspect a possible inheritance of mental characters in the same sort of way, with contributions from parents, grandparents, and more remote ancestors. A correlation between father and son of .312 is given by Schuster and Elderton (in "The Inheritance of Ability," Dulan & Co., p. 13). Imagine that the total of a boy's character might be  $\frac{1}{4}$  from his father,  $\frac{1}{4}$  from his mother, with smaller fractions, say  $\frac{1}{16}$ , from each of four grandparents, and still smaller,  $\frac{1}{64}$ , from each of eight great-grandparents, and so on, suggesting the series—

$$1 = \frac{2}{4} + \frac{4}{16} + \frac{8}{64} + \dots \text{ad infinitum.}$$

The remote end of the series leads us far back in our evolution from the amœba or other simple ancestor.

Something of the sort may be true, but the common ratio of the series,  $\frac{1}{2}$ , is not a matter for abstract calculation but for observation and experience to determine. See "Biometrika," Vol. II, p. 357.

The rate at which ancestral influence fades out has not often been determined for mental characters, but there is no reason for assuming that it could not be measured if only we had adequate means of measuring character.

We get, then, a picture of human personality, both of the "ego" and of the "tu quoque," as a sum total of an infinite series of terms, diminishing and finally fading into insignificance. Think of it when next you look round the classroom—*Each boy is the sum total of the infinite series of the fading ghosts of all his ancestors.*

But let us be careful. Some curious things happen in the pedigrees of sweet peas. There is dominance and recession, and reversion to remoter ancestry. The children of the same human family are not identically alike: some may take after the mother rather than the father. We must not assume that the parents make equal contributions. Instead of writing  $1 = (\frac{1}{4} + \frac{1}{4}) + (\frac{1}{16} + \frac{1}{16}) + \dots$  and exhibiting equal contributions from the members of each generation, for anything we know the series may begin  $1 = (\frac{5}{24} + \frac{7}{24}) + \dots$  (Compare J. A. Thomson, "Heredity," pp. 102-105.)

Galton's laws of regression seem true as average results from great numbers of cases. They represent the statistical stability of the average. We must not assume that the coefficients will be the same for individuals as for averages. That would be as bad as assuming that the average atomic weights of silver and chlorine, as determined by experiments on some billions of atoms, discover for us the actual relative masses of any two individual atoms which may or may not differ from the mean of their species.

Hence we keep our minds quite open as to the magnitude of the coefficients in the ancestral formula for any particular boy, and write

$$1 = \left( \frac{1}{a_1} + \frac{1}{a_2} \right) + \left( \frac{1}{b_1} + \frac{1}{b_2} + \frac{1}{b_3} + \frac{1}{b_4} \right) + \left( \frac{1}{c_1} + \dots \right) \&c.,$$

leaving the coefficients to be explored by observation. And this might, of course, be done if the existing system of school marks (now used for stimulus) could be transformed into a system of scientific observations for purposes of research.

#### MEASUREMENTS OF CHARACTER—RESPONSIVENESS.

The fundamental characteristic which we inherit from our remote (?amœboid) ancestors would seem to be responsiveness, power of response to stimulus, what the physiologist calls irritability (not the same as the irritability of the moralist). This character differs as between the torpid toad and the merry robin, or between active youth and sedentary age. The differences are in the nature, the magnitude, and the rapidity of the response.

How can we measure these? Rapidity of response we know as personal equation or reaction time. A simple test is to find the least height from which a penny can be dropped before a hand beneath it is withdrawn. The tapping test to see who can make the greatest number of pencil dots on a paper in ten seconds brings out the marked inferiority of the mental defective. It is a simple test, easily applied to Members of Parliament in their hours of leisure. The number of consecutive piano notes struck or syllables spoken in a second is a similar test. The game of snap popular with children is a reaction time test, involving the speech organs. The ear to speech reaction time is of great social importance, determining who can and who cannot join in a mixed conversation.

An intelligent dog may be tested by finding from what least height above its nose a biscuit may be dropped and caught. The eye to beak time is very short for a duck. So is the eye to wing time for a butterfly in bright sunshine. These results appear absurd, as though the lower animal had the higher character.

But consider the length of nerve through which the nervous impulse has to travel. For small animals it is very short. Their movements are quick if they are warm-blooded. Then, perhaps, the fundamental measurement is not a time but a *velocity*. In the case of our own limbs there is also the moment of inertia of the swinging arm to consider, so we prefer to measure with a long nerve tract but a limb of small moment of inertia like the finger. Our velocity of nervous propagation is about 30 metres per second. Is this velocity of the chemical explosion wave travelling through nerve one of the fundamental measures of character?

#### NORMAL CHARACTER *and Character at a given instant, or* MOMENTARY CHARACTER.

Repeated signalling through the nervous system wears down its properties, as we see in the jaded schoolmaster. Under exhaustion a state is reached at last in which impulses are either not originated in the brain, or not carried by the nerves, or not executed by the muscles. There is an intermediate stage in which the response to stimulus

becomes delayed and erratic, and in which judgment as to the right response seems lacking. This is the state of "irritability" in the moralist's sense of the term; there is lack of continuous detailed self-control; want of "inhibition," as the physiologist says.

It is possible to recover from this condition, and the time taken to recover, whether seconds or months, will perhaps depend on the nourishment of the nerves, on the fat sheath which surrounds the nerve, that is, on the general state of nourishment of the whole body.

We have instances of stored nervous energy, capable of very rapid recuperation, in the athlete on the starting line of a race; or, on a larger scale, in a nation (like England in 1899, or Germany in 1914) eager for war.

The right unit for measuring a total store of energy is the calorie; but what matters on the race track is not the total energy of the fat runner, but the rate at which his stored energy can be made available, that is *calories per second*. The dimensions are the same as those of "horse-power." Can we measure "brain power" in the same units?

Character at a given moment has a certain power of resistance or inhibition to instinctive impulse. Consider the simple experiment of setting a boy to boil water in a test tube. By and by the water will boil over on to his fingers. If he is untrained (or quite fresh from the Classical side) he may drop the test tube (which breaks), and he may swear. If he really wishes not to spoil his experiments he will learn in time to put the boiling test tube quietly and safely into its hole in the rack without even saying "bother." Afterwards he will think about his fingers. A soldier has other opportunities of displaying inhibition even under circumstances which steadily tend to wear down this power as well as to test it. What is inhibition? To keep a test tube steady whilst it is just going to boil over, I suppose there must pass from the brain and down the arm a succession of nervous impulses repeated many times a second, and each greater in magnitude than the anticipated counter impulse to let the tube drop. The recent increased price of glass has led to much greater care of laboratory glassware, and we may hope for some further observations on this very question of the inhibition of the tendency to let hot things drop.

The analogy of the blockading and blockaded fleets will naturally occur. We are told that the blockaded fleet can reserve its coal supply until the day when it makes a dash for the open sea, whilst the blockading or inhibiting fleet must perpetually burn coal and keep steam at pressure. Here, again, inhibition is measured and paid for in calories per second or tons of fuel per day.

Are we right in identifying the power to inhibit impulses with the processes that regain that power after nerves are worn, and to measure both in calories per second. It is exertion combined with starvation that lowers our powers of resistance; food and rest which bring mental restoration.



Then we may define a boy's normal character under standard conditions as his character at 10 a.m., after he has attained normal temperature, and when he has been sufficiently fed, clad, slept, and exercised.

I say normal temperature, because although we cannot watch the life processes in the living brain, or see the moving flush of excitement as different parts of the organ illuminate, we may reasonably suppose that like other chemical processes the mental processes depend on temperature, pressure, and concentration of solution.

We know how the first few tenths of a degree rise of temperature with oncoming fever seem to quicken our thoughts. Again, as to pressure we know that when the pulse gets feeble in sleep or exhaustion our thoughts move slow. When feeling cross or tired (I mean when a boy is feeling cross or tired) it is an interesting experiment to get him to drink half a pint of water and watch the results. Another familiar experiment when engaged in close reading or thinking is to put the feet on a chair or even to lie down on a sofa. *Per contra*, the plan of letting a boy stand up may cause the lesson to run out of his head as the blood pressure falls. We suspect, then, that character depends upon temperature, pressure, and solution concentration within the brain, and yet it may be better not to use these as measures, but to deal with the resulting properties of protoplasm.

Anyhow, we see that the character of the individual is not constant but variable, and yet not erratic but oscillating about a mean.

#### CHARACTER OF GROUP AND CHARACTER OF INDIVIDUAL.

The schoolmaster who tries to be scientific is continually baffled because a boy when isolated seems to have one character and quite another character in class. Consider a simple illustration. The total personal equation time of a whole class is determined by the instructive experiment in which they stand in a ring holding hands and with eyes shut. A squeeze received in turn by each left hand is passed on by each right hand. The pedagogue acting as instigator and receiver can read the total time from a watch. A ring of eighteen or twenty boys transmits a squeeze in three or four seconds. If just one boy is not alert the message is greatly delayed. We therefore choose the minimum time as record, and dividing by the number of boys get the average personal equation of the class.

Now, consider how long it takes for a general laugh to rise in class—the sharp, quick burst of amusement which comes and goes like a flash. Probably more than  $\frac{1}{8}$  sec. and less than 4 secs., neither the total personal equation nor the average. How is this? The response of a smile or laugh comes very differently from individuals. Some are vivacious and detonate on a small stimulus, others, stolid, remaining grave under greater stimulus. But Jones, who would never have smiled at the original incident, may none the less be exploded by the quick detonation of Smith. Hence the whole class laughs within

perhaps one or two seconds. Exacter determinations of the time interval required to raise a classroom laugh might suitably be undertaken. It is probably greater than the individual personal equation, but less than the total personal equation, and needs some other phrase to describe it. Shall we call it the "*explosion time*" of the class? It is a very important practical measure, and perhaps depends on the temperature of the classroom, a class becoming less responsive when the temperature falls below 50°F.

Other analogies and illustrations will occur. Perhaps we ought hardly to stray into the fascinating topic of how national character is built upon individual character if it were not that figures seem to be available. It is suggested that in August, 1914, it took only some forty-eight hours to convert this country from peace to war, that ultimately some 95 per cent of the adult males proved combustible, but that the original and independent detonators were very few in number (four or five has been suggested). These figures should, of course, be checked. The detonators may have been concealed and more numerous; combustion probably went on slowly for months.

#### HAIR-TRIGGER CHARACTER.

In the entire absence of all self-control or inhibition, and in the simultaneous presence of great nervous energy, we get the hair-trigger or explosive state of mind. It is common to states of excitement or elation. It is sometimes troublesome in school, leading to the shouting of hasty answers by the more thoughtless boys in a class. The chief symptom is an immediate response, the magnitude of which is out of proportion to the purpose of the response. It could, perhaps, be treated by bromides; the cane is quite unsuitable.

In national life the results of this temper of mind are almost infinitely disastrous. It is sometimes called being prepared, or swelled head, or Jingoism, or Chauvinism. The Jews called it waxed-fat-and-kicked. Starvation is one cure for it: severe physical exercise is remedial. Prosperity and high feeding aggravate the condition.

A boy sometimes passes through this phase after he has been a year or two at school, and escapes from it again a year or two later. It need not be considered a permanent element in character, but rather a transitory and troublesome condition.

#### LIMITING VALUE OF EXPLOSIVENESS OF NATION.

Other things being equal, a mind which makes an energetic response is preferred. But other things are not always equal; we are faced with an occasional maniac, and a human society containing a large number of nominally sane but really thoughtless people, with little power of inhibition, may be most dangerous. Experiments have recently been made on the effects of different kinds of dust in preventing the explosion of coal dust. Sodium sulphate, containing much water of crystallization, seems particularly effective in damping explosions. Now, we may ask ourselves what per cent mixture of Jingoism and

Quakers would be just non-combustible. I was told last autumn that the non-combustible attitude of mind was quite wrong in England, but that it was a pity there were not a few Quakers in Germany.

#### A "RELAY" CHARACTER.

The device called a "relay" is familiar to electricians—a feeble current operates an electro-magnet, which closes a circuit, and brings a stronger current into play. With a series of relays we can imagine an indefinitely small force employed to wield another force indefinitely great. Consider the feeble electric current to the signalman's cabin, relayed through the signalman's brain to the levers that move the points and switch some hundreds of tons of express train on to another line. The human brain may be just one more relay in a chain of mechanical relays. There is no equality between the stimulus and reaction, between the ether waves that carry the word "mobilize" to the retina of the eye and the resulting mobilization. Homer noticed that some human minds are very efficient relays, their words are "winged." But there are many inefficient relays, speaking words not winged, and to whose minds great stimulus of loud noises must be applied to produce even meagre results. What is the nature of the mind that makes a good relay? Is it a mechanism with rather extensive mental associations, and well supplied with inhibitions, so that only the right associations shall respond? The mental defective has a character which is not a good relay.

If we are right in thinking that the fundamental measurements of character are responsiveness measured as *velocity* of nervous impulse and inhibition measured in *horse-power*, let us next see how these measures are to be combined. We have no use for persons whose reactions are as slow as a slug's or as unrestrained as a maniac's. That is, the total social usefulness is still zero when either of the fundamental measures is zero. Each component is useless without the other. Then their joint effect cannot be represented by linear addition, nor even by any sort of vector addition; they are not like forces with a resultant along a diagonal of a parallelogram. The combination must be by some rule such as that 0 and 1 make 0. That is, the measures are *multiplied*. So far, then, character appears to a *product of a velocity multiplied by a horse-power*, or in dimensional units

$$L/T \times ML^2/T^3 = M.L^3/T^4$$

#### CHARACTER A DIRECTED OR VECTOR QUANTITY.

Is character to be thought of as a merely scalar quantity or as a vector having direction? Professor Perry, who is at home among electric units, volt, ampere, and ohm, warns us: "Take care lest you are dealing with space of more than three dimensions." Have we left anything out? If we ever did reach a correct system of measuring character it should be possible first to test a boy's character in



England, and then send him to Charlottenburg for impartial standardizing. I have only one case in point. His mathematical master wrote: "Capable of any atrocity in Algebra"; his German holiday hostess "Ein idealisches Kind, solches findet man selten in Deutschland." Here we have the suggestion that an ideal character must be a character with ideals, that is to say, one which is self-directed, not merely driven. No amount of discipline of the command and obey sort will ever produce this idealism; it may destroy it. Hence we question whether the cane has not been over-valued as a formative influence. There is no use in deliberately making a boy's life into an obstacle race. It is not the obstacles that train character, though they may be the means of detecting the idealism that overmasters them.

#### A DIRECTED CHARACTER.

How, then, shall we picture our diagram of a character with ideals? With arrows pointing outwards like a wind-rose? or prickly all over like a hedgehog? And is there any fundamental direction line like up and down, + and -, or north and south? What shall we say about egoism and altruism? Is this the plus and minus line? The mind that feels another's pain as keenly as its own is sympathetic because of a power of visualizing or imagining how things seem to others. That is, altruism depends in part on vividness of mental imagery. But let us remember Prof. Perry's warning: the true diagram of a character with ideals may be one that cannot be drawn on paper, nor even made of wire in three dimensions.

#### OBEDIENCE AS A VICE.

The value of obedience has probably been greatly over-estimated; it is frequently a vice, and as such a shallow excuse for want of moral thoughtfulness in the individual. The obedience doctrine shirks the whole question of whether or why we should reverence self-constituted authorities. Let us admit that obedience may afford some training in inhibition. It may quite disastrously inhibit the free pursuit of youthful ideals, and render a boy less capable of idealism in the future.

The perfectly-obedient boy is pathological, doing what he is told at the beck and call of his youngest schoolfellow, an extreme case of suggestibility. We want the kind of boy who can be trusted to do what he ought without waiting to be told. Said an employer: "That man is not a bit of good: he just does everything he is told. He will never get on."

It is quite true that obedience in young people is a convenience to adults who tend to become parasitic on the rising generation. We should be wiser to rely less on their known responsiveness to suggestion and more on training them to independent moral thoughtfulness.

#### HUMBUG ABOUT CHARACTER.

On no educational topic has more nonsense been written than on Character. What is the good of saying that "character is produced by the impact of the personality of the teacher on the individuality of

the pupil," unless we know the meaning of the terms we use. So long as the public will submit to be loaded up with such nonsense, so long will education be a free field for the charlatan. It is a good lesson for the schoolmaster to consider the possibilities of quackery in medicine, and then criticize his own work. Or take a humbler field, and consider the application of artificial fertilizers, chemical manures for your garden. The instructions are plain: "Scatter thinly between showers in spring." You do so, and endure a flowerless summer, and then complain. Questions are asked, and you have to make admissions. The plants grew all right, but how could you expect flowers in a sunless summer? The manure was only advertised to make plants grow. Besides, in your eagerness you have put the manure on too thick. The instructions were "scatter thinly"; too much manure kills plants. After all, you reflect that "between showers in spring" most plants may be trusted to do a good deal of growing without help. I have been a schoolmaster, and am a shareholder in chemical manures. Let us return to the classroom problems.

Between the ages of 12 and 18 boys grow like plants in spring, even if you don't bother much about them, and their characters change whether neglected or not. At age 12 a boy is comparatively empty-headed, with few ideas occupying the mental field, hence delightfully responsive to suggestion, easily led, ready to be helpful. At age 18 there are more things he wants to do; he is more engrossed with his affairs, more difficult to distract, not unobliging, but, can't you see, just at the moment he is particularly busy on something important. The younger boy will get into mischief if you don't supply him with ideas: the older one has more ideas than he can work out in the time allowed. I think we see a change of this sort during the boarding school years. It is quite easy to wrap it up in a good deal of palaver, and hand the boy back to his parents as a notable instance of the training in character effected by the school. The main fact is that he has grown older.

In the artificial fertilizer trade the farmer has some protection when he buys manures advertised to contain 38 per cent soluble phosphate or 9 per cent nitrogen.

It is suggested that education will remain a field for humbug as long as it is possible to advertise character for sale without defining it in terms so strict (e.g., 1 metre per second improvement in nerve velocity) that failure to supply character as defined can be made a ground for legal action and recovery in the law courts.

I have now contributed my fair share to the nonsense that has been talked about character. Mixed with the nonsense are some suggestions. My purpose is to evoke clearer thinking, and I shall be best pleased if someone else will show how to sift the chaff from the grain.

## PUNISHMENT: THE ADJUSTMENT OF A DISTURBED EQUILIBRIUM.

By ALBERT A. COCK.

### I.

THERE are four current "theories" of punishment: (i) the vindictive, retaliatory or retributive, which emphasizes the truth expressed in the common acknowledgment, "it serves me right"; (ii) the deterrent (that the present and future possible offenders may take note), which common speech recognizes when it says, e.g., "I must be more careful next time," or, "That won't do"; (iii) the preventive, i.e., that during incarceration or other form of isolation the offender himself can no longer be an active foe to the State or other community; (iv) the remedial, that punishment may soften or reform the offender's character; a point of view expressed by the sayings: "I wish I hadn't done it, it wasn't playing the game," and "I won't do it again."

Discussions of these theories, however, commonly overlook the fact that they are not equally theories at all. Thus, the vindictive and the deterrent theories state the *objects* of punishment; the preventive expresses an incidental *result* of some forms of punishment, and the remedial is really a theory of the *inner nature* of punishment as a subjective experience, an inner nature which (the theory insists) should govern the mode of punishment. Again, the vindictive theory is really concerned with an *offence*; the deterrent with a *society* composed of potential offenders; the preventive with an actual *offender* for a limited period, and the remedial solely with the offenders' *spiritual welfare*.

It follows, then, that no one of these "theories" can be accepted and the rest rejected. Hegel, indeed (with whose general discussion of Punishment and Sin we are in much sympathy) repudiates the vindictive, deterrent, and preventive theories as "philosophically meaningless."<sup>1</sup> This is only intelligible if we draw the above distinction between the objects and incidental results, and the nature of punishment as an inner experience. Even so, philosophy must accept Punishment as a *whole*, a datum with certain objects which in jurisprudence are clearly defined; with certain incidental results which only occur under a system of government in institutions, large or small—the State, the school, the family—and having an inner nature which is the chief aspect of Punishment with which philosophy is concerned.

Most discussions of this subject emphasize the external aspect, the point of view of the State or other aggrieved party. Hegel is careful, perhaps over-careful, to insist upon punishment in its external individual aspect. But both must be equally recognized. For, *a priori*, an offence always involves two, not one; punishment therefore involves two, not one. Moreover, as Hegel saw, punishment cannot be discussed on purely *a priori* grounds, for it is not known apart from an experience of offence. Hence the discussion must not be too abstract,

<sup>1</sup> McTaggart: *Studies in Hegelian Cosmology*, § 173.



too far removed from experience. Our object in this paper is to suggest that at the present time punishment can best be analyzed and interpreted as it occurs in the school commonwealth; and further, to show that of necessity punishment involves atonement, not merely amendment as Hegel insists, but atonement which is not necessarily made by the offender. An offence, crime or sin is a disturbance of an equilibrium. Punishment is the adjustment of that equilibrium. Both offence and punishment are imparted by persons against persons. The disturbed equilibrium is between persons. Both the individual and society are involved, and both must be conjoined in any true theory of punishment.

## II.

It will be well first to summarize the Hegelian view as amplified or amended by such a modern exponent as Dr. McTaggart<sup>1</sup>. In sin, says Hegel, man rejects and defies the moral law. Punishment is pain inflicted because of this and in order to force (the word is McTaggart's) him to recognize the validity of the broken law and so repent. Hegel's theory, therefore, is that it is by pain that man improves, and he is by no means anxious to spare pain as the advocates of the "crime is a disease" theory are. He does not mean, however, that punishment *will* produce repentance, but only that it can and may do so. There is in the nature of such pain something which tends to produce repentance. We may suggest that this something lies in the reaction which necessarily follows pain, a reaction which in the case of punishment provokes in the punished at least the enquiry, "Was I deserving of this, was it fair?"—the first step towards a recognition of justice and of reverence for the broken, soiled law.

Such repentance, in Hegel's theory, will only occur when the culprit recognizes the punishing authority as embodying the moral law and as possessing the right to vindicate it. This really means that the authority recognizes his status, and the offender the authority's jurisdiction. That is, the culprit has a *right*, as a moral autonomous being, to be punished; a right, we would say, to have the disturbed equilibrium restored. It cannot be restored by him alone. The moral efficacy of punishment, then, for Hegel, depends upon this recognition. In some cases authority heightens an existing but weak and powerless recognition in the offender. At other times, as when duels are prohibited under penalty, it makes for a full collective recognition of the wide scope of moral law. Or it may in its severity have to rekindle or resuscitate a dead moral sensibility as when it punishes cruelty to animals in spite of the plea that the offender doesn't "see" anything wrong in it.

Dr. McTaggart criticizes Hegel for supposing that this view of the purifying office of punishment could be fully adopted by the State. For the State, he urges, prevention not reformation is the main object. Deterrence is more feasible than purification. But surely this is to suppose that the State has no spiritual ends? It is to suppose that its

<sup>1</sup> Viz., in his *Studies in Hegelian Cosmology*.

action must always be of a negative character. It overlooks the fundamental fact that an offence is a disturbance of an equilibrium, which, since it affects two parties, cannot be adjusted until both parties are once more brought into balanced and harmonious relation. Just because the State has its eye on the community at large, it cannot neglect the moral condition of the individual. This is tacitly recognized, e.g., in the provision of prison chaplains, and this provision also expresses the State's assumption that even in the callous the system of punishment as a whole (which includes the chaplain) may induce repentance, and so adjust the disturbed equilibrium more truly.

McTaggart further urges that the moral independence of the modern man is too great to permit the opinion of State or Church to convince him of wrong, even by punishment, if he be not already convinced. Cases to the contrary are too few to be of material importance, and Hegel was mistaken in trying to identify the Kingdom of Heaven with the kingdom of Prussia.

This, again, is a monstrously large assumption. In spite of his assertiveness, and in spite of the "equality" dogma, why should we assume that the modern man is grown up in every respect? Is it not matter of daily experience that outside their own special field most men are *in statu pupillari*? And this is true of conduct. We may agree that the modern man possesses the rudiments of morality, but not that he is so far developed as to recognize and require no aids to repentance such as punishment rightly viewed can provide. The State is a school where men are in different "forms" for conduct. Some never reach the Sixth. They certainly require to be "convinced of sin."

Hegel's doctrine of Sin views it in his customary dialectic. Innocence, sin, and virtue are the thesis, antithesis and synthesis of a triad. Sin is, moreover, a sub-triad, consisting of offence, retribution, and amendment. It is an affirmation of the sinner's own will, and, *ipso facto*, a denial of the supremacy of the moral law with which *au fond* his true nature is ultimately to be identified. Innocence, since it is non-volitional goodness; and sin, which is volitional badness, are both inferior but necessary preludes to virtue or willed goodness. Thus, to Hegel, evil is more than a condition and concomitant of the good, it is a constituent thereof. Hence sin is in a real fashion higher than innocence. But the realization of sin involves the realization that a false and not a true self has been asserted. Hence realized sin involves suffering, and in this fact lies the possibility of amendment and recovered freedom. That more gradual form of punishment and penance which we call retribution and amendment tends to occur apart from external punishment. This is because the moral law regulates the universe and cannot in the long run be baffled. But specific punishment, by crushing the false independence of the subject, gives a chance for the inherent collapse of sin, and so for retribution and amendment to arise. Hegel is interested, then, chiefly in this ancillary aspect of external punishment.

Now innocence, being only goodness, negates individuality; sin being only individual self-assertion negates goodness; while virtue transcends both imperfections and is truly good and truly self-determined. But virtue can, of course, be increased otherwise than by downright sin and amendment, as when by mere practice defects are removed and higher levels reached. In proportion as the "thesis" at a later stage sums up many past advances, it becomes relatively more and more virtuous than innocent, and so makes the passage to synthesis or virtue more immediately. This amounts to a fuller recognition of habit. In cases where innocence does not pass into sin or where sin does not pass into virtue, McTaggart thinks two explanations are open to Hegel:— (1) He may have considered that arrest in the individual could not ultimately arrest the process in the race and universe as a whole. A moral conquest in one generation may become a normal virtue in the next, though this tends to dull our sense of actual wrong in the offence thus abandoned. Or (2) if Hegel seriously believed in immortality he might explain individual arrest by our defective vision. Death does not stop the process of amendment, but only our observation of it. But Dr. McTaggart thinks Hegel was not serious in this alternative, although it is the better one.

Finally, Hegel's theory is not an excuse for sin. Granted that sin may probably be a step in an upward advance, yet resistance is certainly a stage and a better one upward. Nor is the sin *per se* a moral advance; that only comes in retribution and amendment. Hegel's doctrine, says McTaggart, justifies the English practice of letting a child commit an offence for which it is subsequently desirable that he should be punished. Children must pass from innocence through "sin" to virtue, and education cannot be judged by the same tests as State government. But, as we have suggested, the adult is not necessarily grown up in morality. We must admit, however, that from the point of view of the State as a whole, the use of force which lies behind civil and criminal jurisdiction is justifiable as economy. The State, as guardian of the general well-being, cannot be continually instructing the adult that such and such things are immoral. It must remind him thereof by salutary punishment. In regard to minor offences, other organizations must attend to the offender's private reformation. For instance, when the general will and public opinion decree certain sanitary reforms, these are enforced by by-laws and penalties. The State as a whole gives no further instruction in these matters. The command issues, obedience must follow, and infraction of the law is economically dealt with by instant fine or other summary penalty.

### III.

We have now briefly seen the stress that Hegel lays upon individual penitence and amendment, and the office of punishment in aiding penitence by the infliction of pain. But this does not appear to us adequate. It does not sufficiently consider that punishment must also include the restoration of what has been disturbed by offence, viz., an equilibrium between the culprit and society. Punishment is not merely an inner remedial process, it is also (for both agent and patient) an act of public homage to moral law, a renewal of fealty to justice, and in the long run, we would urge, the mode of reconciliation between the individual and GOD. For ultimately the disturbed equilibrium exists between these two also.

(To be continued.)



## TRAINING COLLEGE ASSOCIATION.

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### GEOGRAPHY IN THE FINAL EXAMINATION OF STUDENTS IN TRAINING COLLEGES.

IN THE Spring of the present year, the Secretary of the Training College Association received from the Board of Education a letter stating that the Committee of Inspectors entrusted with the task of drawing up the paper in Geography for the Final Examination of students leaving Training Colleges in July would be glad to confer with a deputation of the teachers of the subject before completing the draft of their questions. The ordinary Spring Meeting of the Committee of the Association had, unfortunately, already been held, and the shortness of the time available made it impossible to refer the matter to the Representative Sub-Committee. On the other hand, it was obviously to the interest of the Association that the meeting invited by the Board should take place. In these circumstances I felt it necessary to strain my authority as President to do what could not be done by legal process. Acting with the advice and help of the Secretary, I requested six members of the Association to meet the Inspectors, choosing them in the belief that they were fairly representative of the different views on the teaching of Geography and of the various types of Training Colleges. They were:—Miss Hardy, of Leeds; Miss Taylor, of Clapham; Mr. Davey, of Islington; Mr. Jarvis, of St. Mark's; Mr. Lewis, of Dudley; and Dr. Unstead, of the Goldsmiths' College. At my request Dr. Unstead, whom I knew to have taken a prominent part in shaping the recommendations upon which the present syllabus in Geography was largely based, undertook the chairmanship of the deputation. I have to express my cordial thanks to these ladies and gentlemen for their ready response to the invitation to help the Association in so important an emergency. I have especially to thank Dr. Unstead, who not only organized the deputation very carefully, but also drew up a full report of the meeting with the Inspectors.

It will be well to place on record Dr. Unstead's supplementary remark that "the members of the deputation felt that their views were most sympathetically received, and that the frank discussions which took place resulted in a much clearer understanding and a closer agreement between all concerned."

The circumstances connected with the deputation were reported at the October meeting to the Committee of the Association, who resolved that Dr. Unstead's report should be printed in the *Journal*, provided that the Board gave their sanction to the publication. This sanction having been kindly granted, the report appears below. The Committee also decided that opportunity should be given to all who are interested in the matter to discuss the report at a special meeting to be held on

the day before the next Annual General Meeting. At that meeting, consideration will also be given to the means by which the Association may secure the full value of the Board's new and welcome departure. In this connexion reference may be made to the Editor's Note on page 188.

T. PERCY NUNN.

## REPORT OF THE MEETING

### BETWEEN THE BOARD'S INSPECTORS AND THE DEPUTATION.

A MEETING took place on May 11th, 1915, at the Board of Education, between Inspectors of the Board concerned with the examination of Geography in the Training Colleges, and a deputation of members of the Training College Association engaged in the teaching of Geography.

In the course of conversation, the deputation were given to understand that in the syllabus of the Ordinary Course 1 the portions marked (a), (b), (c) and (d) were not to be regarded as of equal importance, demanding equal shares of the teaching.

Paragraph (a) should not be treated from a mathematical point of view; the aim was to secure in the teacher an ability to read and draw contoured and other maps, and to recognize the advantages and distortions of such projections as the Mercator and Mollweide projections, but there was no need to be able to construct these projections or to discuss the mathematical principles involved in their construction.

Paragraph (b) enumerates certain portions of physical geography to be studied, but it is not intended that the teaching of each portion should be detailed, or taken in an abstract manner unrelated to the actual conditions of the geography of the earth's surface. Thus it would be undesirable to give a whole lecture to the subject of wind-denudation, and the teaching of the physical processes should be related to specific regions or districts. Also a due proportion should be observed as between the various phenomena according to their importance as geographical controls.

In paragraph (c) the enumeration of certain "vegetation zones" was not intended as a systematic or complete classification; it selected certain types of natural vegetation as examples, and as an indication of the method by which this part of the subject-matter might be studied.

The teachings of the principles would be applied to the world as a whole, *i.e.*, as a globe over which the phenomena of climate, vegetation, &c., are distributed, but it would be made more definite and concrete by special reference to the particular regions mentioned in the syllabus. These would therefore be described and studied as exemplifying the general principles and also as typical of other regions of the world; they should not be subjects of detailed study.

This detailed study is expected only in the case of the British Isles, and in paragraph (*d*) the syllabus indicates the lines on which this should proceed.

The paragraph following that relating to the British Isles requires a still more detailed study of a small area, based upon direct observation. This study is regarded as very desirable. Owing, however, to the different environments of the various colleges, it cannot be carried out to the same extent in all, and its form would vary with the special opportunities enjoyed by the colleges; no common examination can be arranged, but the work is not regarded as less essential on that account.

In regard to the corresponding Advanced Course (1), it was suggested that it was undesirable for the same region to be selected each year by a college: the regions might possibly be taken in rotation, but it was recognized that the "Mediterranean Lands" region was much smaller than the others in extent, that it would require a special knowledge of historical conditions, and that it would probably be taken for particular reasons rather than in rotation with the other regions.

It was also understood that the geological knowledge of the selected region would be concerned with its structure and the physical character of the rocks as affecting relief and the other geographical factors, but neither the geological history of the region nor the age of the rocks as determined by their fossils would be required.

In all the above matters the deputation were in agreement with the Inspectors, and in addition the deputation raised the following points.

They suggested that teachers and students would devote special attention to different parts of the subject-matter; special opportunities would encourage special study of the physical geography in some cases, the economic geography in others, and the historical geography in others. It would be well, therefore, if recognition of such special study could be given in the examination.

They suggested also that, in view of its importance, the study of the local geography should be either examined or inspected if a suitable method of examining or inspecting could be devised, regard being had to the particular facilities or difficulties of pursuing this study in the different colleges.

In regard to the geography of the British Isles, they deprecated a demand for knowledge of minor matters and small places, *e.g.*, the industries of Macclesfield and Bethesda and the local advantages of these industries, as opposed to a careful study of important matters and larger places, holding the opinion that the future teachers would be better trained by dealing with the broad distributions, major industries and chief centres of population in a thorough and scientific manner even if this prevented attention being given to the minor features of the country.



In a discussion as to a demand for maps to be drawn as part of the examination, the deputation were informed that the intention was to ask for such maps only in the case of the British Isles. The question was raised as to whether a teacher should be able to draw from memory maps upon the blackboard, or whether it would suffice if he could copy certain outlines of a map and then fill in from memory desired features as his teaching proceeded; the deputation took the latter view, and would prefer that the tests should take the form of maps giving certain outlines, *e.g.*, coast lines, rivers, or contours, and that other features should be required to be added, *e.g.*, distribution of rainfall, railway routes, or the position of cities, in order to test the candidates' knowledge both of the facts and also of the relation between the facts. They would prefer questions which would involve intelligence and not encourage mere memorizing of maps.

In answer to questions upon the use of the names of counties, it was indicated that the names of counties might be known in connexion with the natural regions or types of country forming the particular counties, but that a knowledge of the boundaries of the counties would not be required. Also a distinction might be made between those counties with a well marked position or characteristics, *e.g.*, Yorkshire or Lincolnshire, and those without these characteristic features, *e.g.*, some of the Midland counties; the names of the former would be of more importance than those of the latter.

At the close of the meeting, the deputation thanked the Inspectors for the opportunity of an exchange of views, and for their help both in interpreting the syllabus and also in making the teaching of geography of greater value.

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## TRAINING COLLEGE ASSOCIATION.—NORTHERN BRANCH.

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THE AUTUMN MEETING was held at Manchester on Saturday, November 6th, in the Rooms of the Women's Union at the University.

Sir Henry Meers welcomed the members of the Branch to the University, and assured them of his interest in the work of Training Colleges and of his wish to help the Branch in its work. The subject of discussion was "The War and the National Teaching Service."

The Principal of the Manchester Municipal Day Training College opened the discussion with a paper on the Supply of Teachers, in which he showed that the War would only aggravate a very serious shortage of teachers. Mr. Cann dealt specially with the numbers of entrants to the profession from 1900 up to the present year, and offered various reasons for the diminishing numbers entering the profession. He calculated that about 8,000 teachers would be needed for the Elementary Schools in 1917, and that the Training Colleges would have fewer than 4,000 students to send out into the Schools.

Miss Wodehouse (Bingley) spoke from experience of women teachers, and her view was a more hopeful one both as to the kind of women entering the profession and as to the numbers. She advocated more bursaries and scholarships for intending teachers.

Professor Green, of Sheffield University, thought the extraordinary conditions of the time should be faced, and that it might be advantageous if Training Colleges would be prepared to offer short practical courses of training to men who were unable to join the Army, or who were, perhaps, owing to wounds, &c., unable to go back into the field.

Professor Findlay, of Manchester University, urged that the prospects of the teaching profession could not be assessed in the same way as those of trade and commerce; and Professor Bompas Smith thought that the profession should be made more attractive.

After an interesting discussion, the following resolution was proposed by Professor Findlay and seconded by Mr. Cann, and carried unanimously:—

“That the Staffs and Students (not eligible for military duty) of Training Colleges both Secondary and Primary, should be allowed to supply the places of new teachers who are enlisting, and in this case the Board of Education and other authorities concerned should be approached with regard to the necessary changes in requirements for certificates and diplomas.”

It was requested that the resolution be forwarded to the Training College Association, and that they should be asked to deal with it.

Professor Green voiced the feeling of the meeting when he spoke of the great loss to the Training College Association of Captain Loring, who died while on active service in the Dardanelles. Canon Morley Stevenson was asked to send the sympathy and regret of the meeting to Mrs. Loring.

Hearty votes of thanks to the Manchester Sub-Committee for their kind hospitality brought the Conference to a close.

The next meeting will be at the Sheffield University in the Spring Term.

S. WALKER, Hon. Sec.

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## REVIEWS.

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### The Use of the Globes in Elementary Schools: A Manual for Teachers.

Leon. O. Wiswell. (77 pp.) 1/6.net. Harrap & Co., 1915.

THE title of this book is misleading. The term, “Use of the Globes,” though little understood in this generation, has a thoroughly well-established meaning that has continued with little or no alteration for four hundred years. By it is meant the application of one or other of two globes—the terrestrial and the celestial—to the solution of a variety of astronomical and geographical problems, and others relating to navigation and dialling. Many of the problems are of everyday interest and of more or less importance, such, for example, as finding the time of sunrise and sunset, the length of twilight, &c., on any given date and at any particular place; determining the parts of the earth where eclipses would be visible on any given occasion; calculating the time of stars rising in a particular locality; estimating the time of high-water at any part of the earth, and so on. Other problems are of academic interest or pertain to astrology. For practical purposes they may be ignored. Obviously the basis of the study lay in a thorough understanding of the mathematical properties of the sphere, of latitude and longitude, the ecliptic, the constellations and the like. The globes, in fact, served the avowed purpose of rough and ready calculating machines for dealing with all manner of problems that can be accurately solved by reference to astronomical tables coupled with a certain knowledge of mathematics.

The present volume confines itself to the terrestrial globe, and deals with a number of quite simple topics that one would imagine were thoroughly familiar and in everyday use—for example: latitude and longitude, day and night, the seasons, shortest distances on the globes, &c. Two general criticisms arise after a perusal of the book. In the first place the author starts with the globe instead of with children's experiences of the world around. In the second, the subject is treated both slightly and inaccurately.

To take the second point first. He allows himself to repeat just the kind of stock errors that the systematic study of the globe is calculated to check. What are we to think of a book that tells us that Dec. 21st is the beginning of winter, and that the vernal equinox is the commencement of spring in these latitudes (p. 31); which leads us to believe that daylight and darkness are equal in length on March 21st—for the author thinks it quite unnecessary to define the terms day and night, or even to mention twilight; which asserts that the reason it is not "unbearably, even dangerously" hot (p. 33) in the frigid zone in summer is because the heat rays there slant so much and therefore impart little heat. It is obviously outside the scope of a review to elucidate the connexion between insolation and temperature. We would, however, suggest as a preliminary a simple arithmetical calculation of the average altitude of the sun say, at the North Cape 70 12 N, for the summer half of the year and a comparison with conditions in London during the winter six months.

One of the claims that has always been put forward in advocating the inclusion of the "use of the globes" among the materials of instruction is the opportunity it provides for practising pupils in exact thinking. A movement making for more exactness in school geography would not be altogether unwelcome at the present time. But the above examples are indication enough that the present book does nothing to this end.

Moreover, it repeats the mistake that brought the use of the globes into discredit. Instead of basing the study on outdoor observation and record of the movements of the sun, and other heavenly bodies, it treats the earth once again as a globe of pasteboard without meaning and without content. The very method, in fact, that Rousseau denounced so emphatically in the *Emile*.

C. BIRCHENOUGH.

**Educational Values and Methods, based on the Principles of the Training Process.** By W. G. Sleight, M.A., D.Lit., Lecturer on Education under the London County Council, with a Preface by C. Spearman, Ph.D. Oxford University Press, 1915. (vi+364 pp.) 4/6 net.

THERE is no risk in saying that this book will be read with great interest, and will provoke much serious thought among those who are sincerely interested in education. Dr. Sleight first discusses the main psychological experiments that bear upon the question of formal training, and considers his own investigations in more detail. From this experimental basis he draws his conclusions as regards the spread of specific training by means of a usable common element and as regards the formation of ideals and concepts of method. These conclusions, when the selection of the material for the curriculum is considered, become unified into the one principle of the intrinsic value of the material. "We shall satisfy all psychological, pedagogical, and social demands if we apply the one standard of worth, namely, the intrinsic value of the material," p. 164.) A break is made in the main flow of thought in the book to examine critically the educational ideas of Spencer, Welton, Raymont, Findlay, and Bagley. The task of selecting a curriculum on the basis of intrinsic values is attempted, and the modifications and compromises of this principle when thus practically applied are fully discussed. Two interesting chapters are added, showing a more detailed practical application of the principle to the school subjects of English and Nature Study. The whole book is written in a lucid and, on occasion, pungent style.



The work is a sincere attempt to construct a theory and scheme of educational practice on a sound, consistent scientific basis. But the attempt does not meet with unqualified success. Probably on account of the theme being too ambitious for the size of the book, there is much dogmatism. Reiterated assertion is in places offered as proof. The modifications and compromises suggested in Chap. X detract from the value of the single touchstone principle. But more especially the above attempt stands in a precarious position because its foundation appears to be unsafe. Though no one will deny unstinted praise to the experimental work of Dr. Sleight as published four years ago, and all will agree that it was a definite advance on previous work, yet it is open to very many vital criticisms, only a few of which have since been published (see S. F. Jackson in this *Journal*, Vol. III, No. 3). Nothing will bring *Experimental Pedagogy* more surely into disrepute than the unscientific proceeding of hastily applying without qualification to the whole realm of educational practice unconfirmed experimental results, obtained, moreover, on a comparatively narrow basis. In the present instance the criticism is all the more cogent since this particular field of *Experimental Pedagogy* is so highly controversial.

It is refreshing, however, to find such a "whole hogging" application of a principle. The general consistency is only heightened by the few cases where the author deserts his principles, as, for example, when, approaching the question of the inclusion of grammar in the curriculum of the elementary school, he says: "Just because it *is* possible to form concepts and apply them to many different situations, thus avoiding the necessity of specific instruction in every branch and sub-branch of knowledge, it is useful to teach children the leading principles of speech and composition" (p. 322)—a clear case of desertion.

It is difficult to agree that this principle of intrinsic values, when applied to the selection of the curriculum, has the precision claimed for it by the author. If the curriculum is to consist of "the outstanding features of our common national experience," many will object to giving due prominence to the more evil part of that experience, and if the school is to "mirror life in that real yet diagrammatic way which omits everything but the essentials," we must still ask "What is life?" These contentions the author does not attempt to meet.

It is a virtue of the book that it will provoke controversy, and though there is little that is not at present being followed in enlightened school practice—for the book is mainly a recrystallization of the best current practice around a single nucleus—it will amply repay close study. W.V.

**Teaching: its Nature and Varieties.** By Benjamin Dunnville, M.A. (446 pp.)  
University Tutorial Press. 4/6.

THE author states his purpose as being "not to deal specifically with the teaching of the various subjects," but rather to give "an explanation of the processes involved in all forms of instruction, whatever the subjects may be." As the book proceeds, however, the different character of different subjects compels him to become more and more specific, and Reading, Literature, Composition, History, Moral Instruction, Object Lessons, and the Handwork subjects, all receive separate sections. The motives for learning to which the teacher is to appeal, and the procedure to secure memorizing, receive separate chapters (V and IV respectively). The more general chapters are those on "Teaching as Telling" (III), the Teaching of General Truths, which is illustrated mainly from Grammar and Arithmetic (VIII), and Heuristic Teaching (IX).

The book is intended for Training College students, and, we think we may fairly say, has in mind examinations where many questions of a "practical" type are set. The author in the preface lays great stress on the questions set at the end of each chapter; but these are not of the nature of problems, but direct questions on the text, and seem mainly intended to secure that the student can state his knowledge of educational views in a clear and succinct form.

The principles and canons laid down are such as would commend themselves generally to educationalists; in fact, a sane orthodoxy is the prevailing note of the book. Indeed, we wish the writer had given us a little more of his individuality, as he has done in his advocacy of the Lock and Say Method in the teaching of reading. We confess to a belief that education is too human a thing to be enunciated with the precision of the writer on the natural or even the historical sciences as a body of objective truth; and that the most judicious balancing of the motives by means of which the teacher is to make the pupil work, if it is clearly the author's purpose that all should be enumerated, and in the order of their importance, appeals to us less than an enthusiastic advocacy of some particular standpoint which the author thinks is too much neglected.

If the treatment is to appeal mainly to the intellect, it is the illustrations of principles which will be most efficacious. Would it not be well therefore to make sure that the instances which are selected to illustrate principles of method should likewise illustrate the principles of curriculum which are laid down elsewhere in the book? Throughout, the author gives excellent advice as to the principles on which a curriculum should be drawn up, and at the close calls for a revision in the direction of securing that everything should be more directly related to life and the purposes of the child. Surely from this point of view better illustrations could be chosen in the field of nature work than an apparently isolated lesson on a fish taken from its proper environment, or in that of general truths than the definition, of formal grammar. We may be too logically radical, but we confess that we find it hard to reconcile the principle that arithmetical teaching should arise out of the pupils' actual needs with the teaching of division of fractions at the stage where it is at present commonly taken. May not the difficulties which have to be explained in handbooks of method on this subject be due entirely to our disregard for our own principles of curriculum?

The book is clear, moderate, careful, well-balanced, and touches most of the main problems of teaching; it has the merits of a good textbook. Lecturers would, however, need to be careful that their students felt as well as accepted and reproduced its careful exposition of the *via media* on the problems of practice that confront the teacher.

R. L. ARCHER.

**Psychological Studies.** From the Psychological Laboratory, Bedford College for Women, University of London. (pp. 161.) London University Press. 2/6.

THE book is a record of four psychological experiments which were done as part of the regular class-work in connexion with an Inter-Collegiate course of lectures. They are repetitions of published researches, which were thought to be valuable and cogent. This type of work should be particularly welcome, and, it is to be hoped, will set the fashion of repeating well-planned and promising original researches. Psychologists, up to the present, seeing the vastness of the unexplored territory, have been overpowered by the desire to do something original, be it ever so unimportant and insignificant. There has been an unfortunate absence of careful repetition of crucial experiments by independent investigators, with the consequence that territory already explored is too insecurely held to admit of further advance from these outposts. The greatest evil, however, arising from this overwhelming preponderance of unconfirmed experimental results, is that it strengthens the tendency to overestimate the value of the results obtained from a particular experiment, and to believe that one experiment settles a question finally and incontrovertibly. These studies should be welcome as an imitation, in this respect, of the practice in the older sciences.

The studies were, on the whole, well carried out, although in none of them did all the subjects complete their allotted programmes. The first study is on "Learning and Relearning in Mice and Rats" (H. Macgregor and J. Schinz). It is rather unfortunate that, in what is mainly a statistical study, only two mice and three rats were used, especially as rat J was later found to be blind, mouse S was out of condition part of the time, and several times (as is to be expected) the

animals were very excited. The paper would have been more valuable if the extent of divergence from, or confirmation of, the original researches (which are scarcely mentioned) had been emphasized.

The subjects of the other three studies hang more together. In the one on "Controlled Association" (E. H. Wilson), which is a repetition of Dr. H. J. Watts's work, there is the same tendency to judge from insufficient data, but the paper is well arranged and modest in its conclusions. The same criticism applies to the third study, "An Experimental Enquiry into the Nature of Recognition" (Lucy E. Fildes), in which there were three subjects. This is possibly sufficient when introspections are to be analysed and criticized, but not when numerical measurements are made (see pp. 31, 34, 40, 41, 45). For example, subject A reports "feeling" in 28.57 per cent of the protocols in Experiment I; no indication of the value of this number is given (except by the suggestion of giving it to the second place of decimals), whereas it really means that the subject reports experiencing "feeling" in four out of fourteen cases! For the casual reader it would have been better if the General Conclusions had come at the end.

The best and most important study, and the one which occupies the latter half of the book, is "A Study of Thought Processes." The experiments mainly follow on the lines of those of Dr. Bühler. The whole paper is exceedingly well arranged, and is accompanied by a wealth of illustrations from the subjects' protocols. The three subjects show great skill in introspection, and the experimenter thinks clearly in her analyses, although the reader will by no means agree with all these. In the main Dr. Bühler's conclusions are confirmed. The appendix, consisting of material used, is not the least valuable part of the paper. The studies were conducted independently, but in several instances (e.g., the possibility of imageless thought) they bear one another out. W. V.

**Character and Intelligence.** By Edward Webb. (ix+99 pp.) *British Journal of Psychology* Monograph Supplement. Cambridge University Press. 5/- net.

DR. WEBB'S interesting study follows the lines of Professor Spearman's argument for the existence of a general factor of intellectual ability. He tries to show that, in addition to this intellectual factor, "g," another general factor may be discovered in personal qualities which are not distinctively intellectual. The term "character" is used by Dr. Webb to denote the sum of all such qualities (p. 2). The method of enquiry was to obtain estimates from two independent judges of the strength of certain qualities exhibited by the members of two groups of training students, and by groups of schoolboys from four different schools. These qualities were classified under the heads of emotions, self qualities, sociality, activity, and intellect. Use was also made of the results of the college terminal examinations and of certain experimental tests of intelligence. The correlation of these data furnished fresh evidence in support of the theory of "g," but Dr. Webb's main contention is that it also gives a clear indication of the existence of another general factor which is best conceived as bearing "some close relation to 'persistence of motives,' " i.e., as depending "upon the consistency of action resulting from deliberate volition, i.e., from will" (p. 76).

This conclusion opens up a long vista of possibilities. If, for instance, this factor exists, and is capable of being strengthened by education, a knowledge of it may help us to evolve a scientific method of turning weak characters into strong. At present, however, we can only say that Dr. Webb has entered a field of investigation which may conceivably prove of great value to educational theory and practice. Many issues are raised by the inferences drawn from the experiments, but I can touch only on two points which appear to me to stand in need of further elucidation. In the first place, Dr. Webb appears to regard the experimental tests of intelligence as more reliable than the estimates of the judges. Thus, he dismisses a sense of humour as having little "g" in it, because its correlation with the "objective" tests is very low. In particular he claims



that one of his test questions serves to measure a mental quality approximately the same as the common sense of everyday life (p. 39). Now, it does not seem clear that the ability to answer an ingenious question about possible lines of action in difficult circumstances proves ability to meet a similar situation in actual life. It is possible that test questions are answered best by men who possess a specific type of ability similar to that of the successful examination candidate, and are therefore not a specially good criterion of "g." The high correlation between the results of these tests and of the college examinations may be significant. Secondly, there is the more important question of the validity of the conception of mental life which underlies the whole investigation. Thus, for Mr. Shand, to give an example of a different view, character implies organization, the interplay of systems of emotions and sentiments; for Dr. Webb it is the *sum* of personal qualities which are not distinctly intellectual. I cannot discuss the difference of view implied in this diversity of statement, but I would suggest that Dr. Webb might with advantage have indicated more clearly the general psychological theory upon which his work is based.

H. BOMPAS SMITH.

*The Teacher's Montaigne.* By Geraldine E. Hodgson, Litt.D. (284 pp.) Blackie & Son. 2/6 net.

STUDENTS of the history of education owe a debt to Dr. Hodgson for following her *Teacher's Rabelais* by this similarly planned volume of extracts from Montaigne. Of that great French thinker she has already given us an illuminating critical study to which this version of some hundred and fifty pages of his writings forms a companion and a verification. It is doubtful if any single writer deserves more careful attention than Montaigne, and the very form of his *Essais* is abundant justification for a book of excerpts. We could have wished that Dr. Hodgson had given us more. Some of the essays in the Third Book dealing with various social aspects of the moral life would have been welcome. So, above all, would an abridgment of that greatest essay of all—the *Apology of Raimond Sebond*, without a knowledge of which it is impossible to gain a real insight into Montaigne's views of life. This Dr. Hodgson admits, but its inclusion "would have expanded the volume's limits unduly." The plea must be allowed, for the book is intended for students entering on the subject. Granting the necessity for its omission, Dr. Hodgson has done the best possible in giving a summary of its main positions in an Epilogue, which we should advise the reader to master first, as giving the key to all the rest.

We have altogether twelve essays in whole or in part, and not one of them could be spared. The translation is a new one, and reads easily and well. Moreover, in places where we have tested it it gives tersely and often forcibly the sense of the original. That it has no archaic flavour will render it yet more serviceable to those for whom it is primarily intended.

The version is preceded by a very suggestive and helpful Introduction of nearly forty pages. With the estimate expressed of Montaigne we are in cordial agreement. He was, as Dr. Hodgson insists, before all the prophet of the education of "the whole man." "In this intense perception of the value and importance of individuality his unique contribution to the Science of Pedagogy—which, after all, is only a department of the Science of Life—is to be found. . . . One cannot imagine what he would have done with that great mass of people who, in our modern bustle, have somehow lost their individuality, and so fail utterly to suffice for their own solace and individuality" (pp. 34-35). Let the reader reflect on those words, and the need for all who educate to ponder deeply on the principles of Montaigne will become apparent.

Of course Dr. Hodgson does not accept the shallow opinion that Montaigne was a religious and moral sceptic. The view she has gathered from her study of him is, it seems to us, admirably put: "It is not unreasonable to hold that in matters of moment to his lasting and highest welfare, man is under Divine guidance; while in affairs of more indifference he is left to experience and to whatever common sense he may possess" (p. 40).

Much more could be culled from this most helpful Introduction did space permit. We can only urge the reader to study it and the extracts from Montaigne which follow.

J. WELTON.

**Studies Introductory to a Theory of Education.** By E. T. Campagnac. (xiv+133 pp.) Cambridge University Press.

SOME idea of the general tenour and of the attractiveness of Professor Campagnac's book may be gathered from his description of the counsels which he is in the habit of giving to his students. "I have begged them," he says, "to concede in their own case what I do not doubt they have readily granted for me, that it is not much of anything that we really know; . . . and that what we claim to know is of no account whatever till it is fused with what we feel, mingled inextricably and yet not confusedly with our hopes and fears, with what I have not scrupled to call our ideals. . . . I have attempted to persuade them that our ideals never reach the vivid intensity at which they can properly be regarded as personal until they have become social." The *Studies* are no formal treatise on educational theory; they are rather a series of meditations upon some of the fundamental problems which confront us both as teachers and as men. Thus, Professor Campagnac deals with the meaning of ideals. Our ideal is the image of ourselves as we desire to be, and it inspires and guides us because it involves our realization of our membership of society. If our ideals are to be effective, the lives both of the individual and the State must possess unity of aim and sentiment; men and states must be the artists of their lives, finding and representing the central forces which give unity in variety and harmonize apparently conflicting elements. Thus, in the State, prophets, entrepreneurs, and workers must all share in the achievement of a common end—the goodness of the citizens, a goodness directed by intelligence and based on knowledge. Education is the process by which a man learns to share in the wider life around him, "to maintain conversation with the world in which he lives." The work of teaching is a social process, and its result is neither the teacher's nor the pupil's, "but a new experience which they have both lived through together." The teacher has the right to invade the freedom of his pupils, because in so doing he helps them to appreciate the law to which obedience is due from teacher and taught alike. "A man who undertakes the business of education is engaged in revealing to his pupils what they have imperfectly apprehended of themselves—the unity of their own lives."

If Professor Campagnac has not completely realized his own ideal of saying what he knows quite clearly and quite simply to other people, he has, at any rate, given us a book full of true insight and suggestive thought, which will prove more enlightening to the sympathetic reader than many long and pretentious treatises.

H. BOMPAS SMITH.

**A Textbook on Practical Mathematics.** By H. Leslie Mann. Longmans. 7/6.

THIS treatise on "Practical Mathematics" carries the subject further than most treatises on the subject have done, for it not only includes elementary infinitesimal calculus, but subjects like differential equations, Vector Analysis, Fourier expansions, and Calculus of Finite Differences. The surprising feature is the absence of any strict proofs, not only strict in the sense in which proof is now required in specialist mathematical treatises, but in the sense in which it was asked for thirty years ago. As examples, may be cited the practical ignorance of any necessity to prove the binomial theorem for anything except a positive integer; the word "convergency" does not seem to occur; and the "proofs" of the perfectly correct theorems given in the "Finite Differences" chapters are not only hard to follow, but seem to suggest uncorrected misprints.

The methods given for solving problems of interest to the engineer and the physicist are, however, correct and clearly stated; and if the absence of proof is accounted for by the title "practical," the book decidedly fulfils its apparent object. The examples are well chosen; dangerous expansions like those made by

Fourier's theorem are correctly given (except that the failure at the limits is not pointed out), and many mathematicians will find the practical hints given to be helpful. Those who are content to take proofs on the sanctity of authority, and are not troubled by considerations of convergency, will find their power over problems needing mathematical treatment decidedly increased by a practical study of this book.

A.H.L.

**The Education of Karl Witte.** Translated by Leo Wiener; edited, with an introduction by H. Addington Bruce. (xi + 312 pp.) Harrap & Co. 4/6 net.

KARL WITTE was Professor of Law in the University of Halle, and a distinguished Dante Scholar. He matriculated at Leipsic at the age of nine, took the Ph.D. degree before he was fourteen, and at sixteen was made a Doctor of Laws, being appointed at the same time to the Staff of the University of Berlin. Through the kindness of the King of Prussia he spent several years in foreign travel, after which he was made full Professor at Breslau in 1823, and was translated to Halle in 1834, where he worked for nearly fifty years. Like John Stuart Mill and Lord Kelvin, Witte owed his early education to his father—it will be remembered that Lord Kelvin was admitted a student at Glasgow when he was ten—and this book is the father's own account of his methods. It was written, one might almost say, in self-defence. At least it was an answer to wiseacre critics who shook their heads over the sad future that awaited the prodigy. The father's view, however, was that all children would gain enormously by an early and systematic start in their education. The current idea that their minds should lie fallow for eight or nine years was to him a pernicious mistake, and he tells us in these interesting pages how he worked with his boy almost from the cradle. Pestalozzi knew Witte and took great interest in his work, urging him to tell other parents what he was doing, that they might be inspired to like effort. Needless to say the book is well worth reading. Professional schoolmasters as well as parents will find it most suggestive and interesting.

J. A. G.

**The Study of Plants: An Introduction to Botany and Plant Geology.** By T. W. Woodhead, M.Sc., Ph.D., F.L.S. (440 pp.) Clarendon Press. 5/6.

THIS is something new in the way of an Elementary Text Book, and we are glad to give a warm welcome to it. It has often been made a charge against Botany books that they are dry. But this is neither the old descriptive book, dealing largely in the use of terms, nor the more modern book, setting problems and directing observations for students in a laboratory. The reader will find himself drawn to the fields and hedgerows, to the woods and the unsheltered heather moors. There are plenty of experiments and observations, many of the latter original, yet the feeling that remains after a perusal of the book is not that we have been conducted through a dissecting room, but rather that we have been out with the flowers, and have been watching the plants grow. The titles of some of the chapters are significant: Cone-bearing Trees, Catkin-bearing Trees, Plants of Hedgerows and Walls, Woodland Plants, Grass Lands, Weeds, Vegetation of the Sea Coast, Moorland and Alpine Plants. As to the printing, the type is bold and clear, and the illustrations are admirable. We know of no book of its kind that approaches them either in quality or in quantity. There are hundreds of excellent drawings and beautiful photographs, almost all of them new. As a rule Dr. Woodhead has treated form and function together, yet we must confess to a feeling that the first two chapters are not the most successful in what is, taken altogether, an admirable book.

W.S.

**Domestic Science.** By Charles W. Hale, A.K.C. (Part I, xi + 327 pp.) Cambridge University Press, 1915.

THE first comment called for by this book is that the title is misleading. It has nothing whatever to do with domestic science, as indeed the author carefully points out in his preface. Its aim is to deal with those matters "which are needed as groundwork in any elementary science course." The domestic application is to be found in a further book, entitled Part II, which is not to hand.



In a brief notice two observations will suffice. The introduction to elementary science to be of much value should begin with a study of familiar everyday contrivances, processes, and phenomena. One would imagine this was a truism so obvious and so worn as not to require restating, for it was a popular doctrine even a hundred years ago. Instead of going to the varied domestic processes and experiences of the home, the author would keep his pupils for a year studying something that is almost entirely devoid of meaning or of any practical significance; just the procedure best calculated to kill science.

The second observation called for is this. The mere devising of experiments by the teacher, and the carrying out of them by pupils, is not necessarily furnishing any sort of scientific training. It is a method that has been the bane of so-called elementary science for a generation. Experiments, properly speaking, are so many investigations into problems that have been raised when the need for an answer has been felt by the pupils. This spirit seems absent from the present book. Besides, one would entirely disagree with a method of training that handles such scientific fictions as "molecules" in the way of this book.

**Briggs and Bryan's Tutorial Algebra.** Advanced Course. Fourth Edition. University Tutorial Press. 6/6.

IN the fourth edition of this Algebra, the book has been carefully revised, e.g., an erroneous graph on page 409 has been corrected, and a paragraph in the chapter on Limiting Values and Theory of Infinite series, which in the old edition was nearly identical with the succeeding paragraph, has been removed. This chapter has been, in part, re-written, and the changes add to its value as an introduction to this part of Algebra. The revision has yielded a small crop of new misprints, most of which are not likely to present difficulty, but attention may be called to the statement on page 451 that "if a series arranged in ascending powers of  $x$  is absolutely convergent when  $x = a$ , it is convergent for all values of  $x$  such that  $x < a$ " as likely to confuse students who will get most of their knowledge of convergency from this chapter, and may accept the above unnecessarily limited statement as equivalent to the usual theorem. In a future edition the treatment of uniform convergence might be made less liable to misconception than it is in the text; the former edition's treatment of this subject has been left untouched.

There is a new appendix on the solution of equations; some erroneous solutions, in which certain roots are neglected, are well chosen and commented on; but the fallacy in these erroneous solutions, which is either the division by a quantity that may be zero or the multiplication by one that may be infinite, is not indicated in the text.

The value of the book is well known; these remarks mainly refer to the changes made in the present edition.

**Handwork as an Educational Medium.** By P. B. Ballard, M.A., D.Lit. (228 pp.) Allen & Unwin. 3/6 net.

THIS, the second, edition of a book first published in 1910, is in effect a new work. In its present form it constitutes the best discussion of the case for handwork as an educational instrument that we possess. It is pleasantly written, and in spite of the theoretical difficulties of some parts of the subject, Dr. Ballard's powers of exposition are equal to the occasion. He always keeps a steady eye on the main issues, and his readers cannot fail to understand his argument—witness his chapters on "The Relation between Motor Development and Mental Development," and on "The Nature and Rôle of Modern Imagery." Some psychological equipment is of course assumed, but it is not more than every schoolmaster may be reasonably expected to possess. We commend the book warmly to all students of "Educational Handwork."

**A History of the Ancient World.** By Hutton Webster. (xxii + 682 pp.) Harrap & Co. 6/- net. (Illustrated.)

It is not easy to write a satisfactory history of the Ancient World which shall be at once concrete enough for schoolboys and sufficiently broad and well-balanced to satisfy the scholarly critic. Professor Webster has made an admirable attempt. Schoolboys will certainly find his pages interesting, and one may hope that the existence of such a book will help on the time when universal history will receive adequate attention in our schools. The author has provided us with abundant illustrations and maps, and his chapters on the artistic and social life of the ancient world do not lose interest in the necessary process of condensation.

## BOOKS RECEIVED.

*A number of these books will receive more extended notice in a later issue.*

**The Child: Its Nature and Nurture.** By W. H. Drummond. (viii + 283 pp.) Dent & Co. 2/6 net.

(A new and much enlarged edition of Dr. Drummond's well-known volume in the Temple Primer Series. It has some new chapters, including one on the Montessori Method. The illustrations are also a new feature).

**Readings in Vocational Guidance.** Edited by M. Bloomfield. (xv + 723 pp.) Ginn & Co. 10/6.

(An extremely valuable collection of "papers" dealing with both what is and what might be in a practical problem which we have hardly begun to face in our country).

**Schools of To-morrow.** By John and Evelyn Dewey. (viii + 316 pp.) Dent & Sons. 5/- net.

(For the most part a descriptive and critical account of many new educational experiments. As a concrete presentation of Dewey doctrine, the book will be read with great interest and profit by many who seem to find his published essays vague and difficult).

**Everyday Pedagogy.** By Lillian L. Lincoln. (viii + 310 pp.) Ginn & Co. 4/6 net.

(A good practical introduction to the daily work of the school and classroom. Modestly described by its author as containing "nothing new," the subject is freshly treated, and young teachers will find much useful direction in its pages).

**Scientific Management in Education.** By J. M. Rice. (xxi + 282 pp.) Harrap & Co. 3/6 net.

(A reprint of papers which appeared ten years ago in the *Forum*. Although much has happened since their first publication, it was a happy idea to reissue them in book form. Dr. Rice's work was directed to problems of great practical importance, and he was one of the first to apply quantitative analysis to the elucidation of classroom problems).

**Poetry and Life Series.** Harrap & Co. 1/- net each volume.

**Cowper.** By J. A. Roy.

**Whitman.** By H. B. Binns.

**Chaucer.** By E. W. Edmunds.

**Marlowe.** By J. H. Ingram.

**Our Country's Industrial History.** By W. J. Claxton. (253 pp.) Harrap & Co. 1/6 net.

(A simply written and nicely-illustrated volume, admirably suited to the needs and interests of boys on the threshold of industrial life).

**The North-West and North-East Passages. 1576-1611.** Edited by P. F. Alexander. (xix + 211 pp.) Cambridge Press. 2/6 net.

(The first volume in a new series of Cambridge Travel Books, intended "to illustrate the history of geographical discovery." They are to consist of selected reprints from original accounts. The present volume is chiefly devoted to Frobisher, Davis, and Hudson. The Editor contributes a useful introduction and explanatory notes. The volume also contains illustrations from original sources and some maps).

**Stories of Exploration and Discovery.** By A. B. Archer. (xi + 198 pp.) Cambridge Press. 2/6 net.

(An interesting course of travel stories, furnishing a general outline of continuous endeavour. After dealing with the Ancient World, the age of the Vikings and Marco Polo, the book carries us from the days of Henry the Navigator to the present time. Although necessarily slight, it cannot fail to interest boys, and some of them will surely make use of the volumes for further reading suggested at the end.)

**An Historical Atlas of Modern Europe (1789-1914).** By J. G. Robertson and J. G. Bartholomew. Cambridge Press. 3/6 net.

(Twenty-three pages of text and thirty-six pages of maps. The text is historical, explanatory. The maps are admirably clear: both colour and type are well chosen. The pages are happily large enough to prevent overcrowding. A much-needed volume, especially at this particular moment.)

**A Picture Book of British History.** Compiled by S. C. Roberts. Vol. II. 1485-1688. (69 pp.) Cambridge Press.

(An excellent "companion" to the History Lesson which no classroom in which History is taught should be without. The illustrations are very carefully chosen—they do actually illuminate and vivify the history—and they are reproduced with the utmost care.)

**Methods for Measuring Teachers' Efficiency.** Part II of the 14th Year Book of the National Society for the Study of Education. University of Chicago Press.

**Psychology of High School Subjects.** By C. H. Judd. (ix + 515 pp.) Ginn & Co. 6/- net.

**North America During the Eighteenth Century.** A Geographical History, by T. Crockett, M.A., and B. C. Wallis. B.Sc. (viii + 116 pp.) 3/- net. Cambridge Univ. Press.

**Methods of Teaching in High Schools.** By S. C. Parker. (xxv + 529 pp.) Ginn & Co. 6/- net.



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THE TRAINING COLLEGE ASSOCIATION,  
BY  
PROFESSOR J. A. GREEN  
(The University, Sheffield).

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## THE TEACHER AS SOCIAL WORKER.

By M. M. ALLAN, Principal of Homerton Training College, Cambridge.

[*Presidential Address delivered to the Training College Association*].

IN face of the social reconstruction which everyone is asserting must be undertaken at the close of the war, and for which it would be so wise for the non-combatants to be preparing, even during the struggle, the function of the teacher as a social worker may well appear as his most important function. "There is a direct connexion between the efficiency of the educational system of to-day and the lessening of the misery of to-morrow."

Of recent years the Elementary Schools have received an ever-increasing share of public attention. This attention has come not only from the educationalist but from the sociologist. The schools of the people, especially in the poorer areas, more and more take the character of Social Institutes for the physical as well as the mental and moral welfare of the children. Society has awakened to the strategic importance of the schools. Intent on statistics, it has realized that here in our Elementary Schools the children of the nation are already registered. It has awakened to the folly of disbanding these groups and dispersing them whether to Secondary Schools, crafts, trades, or blind-alley employments, and then in a toilsome fashion again seeking information that could so readily have been gained in the school. Hence the schools have now become the centre of interest for all engaged in work of social amelioration affecting child life. The social worker in the Baby Clinic and Free Kindergarten must follow her young charge into the Infants' Schools where the Doctor and Nurse are already happily in possession. The Medical and Dental Clinics act through the schools where they find their cases. In many areas, school feeding is thoroughly established, the abnormal or afflicted children—the blind, deaf, dumb, crippled, and, more recently, the mentally defective, are more or less carefully weeded out and assigned to special schools. Care Committees, where established, seek to keep the child fit and in regular attendance throughout the school course, while at the end of it, the Juvenile Labour Exchanges enter the school to register the potential worker before he or she leaves its walls. \* "It is impossible for us any longer in England to view the school as an independent and isolated unit, and education as a thing detachable from the main stream of life. Infant care and after-care, Evening Schools and Adult Schools, Old Scholars' Clubs and social and religious clubs innumerable, School Libraries and Public Libraries, School Excursions and Country Holiday Funds, Children's Courts and pioneer experiments, such as the Little Commonwealth and the Junior Republics, are not unrelated accidents of the present day." These, like the Continuation

\* *Citizens to be*, Hughes.

Schools, Summer Schools, the Workers' Educational Association, and the Women's Co-operative Guild, are all movements beating upon the rocks of our Elementary School System, with an iteration which must profoundly modify its character.

Already the infants' schools and the schools for physically and mentally defective children are so much more frankly educational in character that one longs to secure their conditions for the senior normal child. Surely not for much longer can "a national system which accepts freedom for the years from three to seven prescribe for the great majority an Anti-Humanist seven years drill which confounds 'goodness with immobility,' and can only deaden initiative." Here our struggle with Germany may (as Mr. Holmes points out in his intensely-interesting article in the *Nineteenth Century and After* for October) make us conscious of our inconsistency in applying to our children and adolescents only that coercive discipline and dogmatic pressure which our antagonist exerts consistently throughout the citizen's whole life, and in expecting at the same time from our young manhood and womanhood individual spontaneity and independent initiative.

It is well, however, to remind ourselves that it is not under present conditions that the Elementary teacher is to come to her own as a social worker. "The efficiency of the educational system," says Devine in his essay on "Misery and its Causes," "does not depend exclusively upon the Inspector and the appropriating and governing Boards, the system rests upon the skill and devotion of the individual teacher. No failure of the mechanism at the top can entirely rob the teacher of the chance to awaken the powers of the child, to teach him at least some of the things that he needs to know, just as no enthusiasm and organizing skill at the top, no liberality of the representatives of the tax-payers, can ensure that teaching, except by discovering and giving scope to the personal enthusiasm and professional skill of the classroom teacher. The relation between increased efficiency and diminished misery is so direct and obvious that I have long looked to the teacher in the Elementary Schools as the one best entitled to be known as the social worker."

This may be so—we must readily grant at least that no liberality on the part of the Treasury will in itself secure that spiritual insight, that unsparing loyalty and intellectual equipment, which the best teacher brings to her work, but the absence of such liberality can, and does, make the teacher's task unreasonably hard; can, and does, frequently make the best kind of work impossible. There are many among us who already say that in the lean years of difficulty that must follow the war, education is bound to suffer; that because of the millions of war expenditure to-day, educational expenditure shall be curtailed for all *our* years at least, and that "we shall all die without seeing the promises." Is it not as true, and much more helpful, to argue that the war has shown us for the *first* time how wealthy our country really is? "If the gigantic war expenditure convinces us of the difficulty of

pressing any other claims at this time, it may also convince us of the paltry nature of our normal expenditure on education, and of the flagrant untruthfulness of the plea that some £30,000,000 in grants and rates was the utmost limit of a reasonable demand. £30,000,000, it now appears, is the cost of a week's warfare."

From top to bottom of our educational administration great and definite changes are urgently called for if the teacher is to come into her own as a Social Worker. Who is to see these changes carried out? Great economic forces more than ever in these days have us in thrall. In other professions and trades war emergency committees of employers are already busy safeguarding their interests, securing necessary labour in the face of enlistment, &c. Here in the schools the employers (the Local Education Authorities) are for the most part frankly out for reaction, so that we find one of our most influential authorities publicly stating that four-fifths of its present retrenchment has been made on its Education Budget and the remaining one-fifth on the budgets of the remaining seventeen Committees. The consumers, the general public, are not likely to act, and what action can the parent of the Elementary School child take even if he cares—on the twelve hours shift probably. Here surely the producers, the teachers themselves, must act, and with the help of all who disinterestedly care for education must set up machinery which can be readily brought to bear against the forces of re-action—shall we look to the Registration Council? Practice must always lag behind theory, but surely in education, theory now out-distances practice to a dangerous degree. To take one example, the Board of Education *qua* examiner sets excellent questions to our students on the threshold of their career upon the social value of the Teacher's work, and the preparation of the child for citizenship, but *qua* administrator publishes cir. 927 and plunges the student into conditions where she can work out hardly any of the ideas they were so concerned to see she had imbibed. We see so much further than the road is laid. One feels tempted to ask some of our keenest educationalists, who have been helping us to seek out which are the greatest commandments in the education of the child, to turn from their own particular métier at whatever sacrifice of time, energy and inclination, and take to the hack-work of administration.

The slight esteem in which the teacher is held (a very old complaint) is writ large over all our educational machinery from top to bottom. Even the Ministry of Education is "a slight unmeritable post." Surely the official guardianship of our children's physical, mental and moral training calls for as great capacity, insight and understanding as any other cabinet post.

The Board of Education, which ought to be the one disinterested guardian of national education with a clear policy of getting the best educational return for the amount of money it can wring from the Treasury, has proved to be, particularly in these last days, and in spite of the never failing courtesy and sympathetic understanding of the permanent



staff, a leader without a policy, willing to throw the reins on to the neck of the Local Education Authorities, like the Scotch miller who, overcome by the conviviality of market day, was heard to murmur to his horse as he yoked him, "Can ye find the way hame, for I canna?"

How different is the note struck by the French Minister of Public Instruction. May I read some lines quoted from his manifesto published at the beginning of this session, addressed to the University, Secondary and Elementary School Authorities? "But if all our educational effort is equal in its moral value, none equals in extent the great effort made throughout the whole area to secure the working of the Elementary School system in spite of the enlistment of 30,000 teachers. In the war zone the peculiar difficulties have not always left a free hand to the educational authorities, but everywhere where we could act with the military authority and where there was no immediate danger the classes have met in the usual course almost up to the fighting line.

"As for the interior, I will not enter into the details of the means by which Inspectors have succeeded in securing everywhere the safety of the great national service of education. They have been supported in their task by the thought that they have carried a very special trust for the men at the front. The fathers of families fighting in the trenches must feel certain and rest in the certainty that the Elementary School would continue to protect the present and secure the future of their children. It is this certainty that I urge the Inspectors during the ensuing year to give to all more strongly by improving everywhere as much as possible the working of the primary schools, elementary and secondary.

"And there is a special matter, bearing upon the supply of teaching staff after the war, which during the ensuing year calls for very special effort. It is the *organization of the Training Colleges*. If last year in some departments the Training Colleges have remained closed, it is impossible that this should continue. It is a situation which gravely menaces the supply of teachers. And in one way or another, all the Training Colleges ought to open next October, and their session ought to be complete and regular, all students ought to complete at least a two years course. We must make an effort to avoid the sending down of students, whether men or women, which was unavoidable the first year, and return to ordinary conditions.

"Thus elementary education during the war will prepare not only the present generation, but will secure to the schools of to-morrow the teachers who will prepare the men of the future."

The children, too, are addressed as follows:—"A like duty is incumbent on the pupils: no rest, no slacking, no feverishness under pretext of the grave happenings around you. To work: that is what is demanded by your fathers, your brothers who fight in the trenches, by all those, known and unknown, who struggle and die for you, by a fatherland trusting in your efforts to assure her future greatness. You understood that last year, and although it was a year of war the level

of examinations has been maintained or improved. You will understand it better this year. Your discipline and your work will become the support of your mothers and the hope of your soldier-fathers. And in your daily task you may well be sustained by the same sentiment as the heroes at the front.

"Let then the school-work for France this year flourish, since indeed the school is France itself. It is the school which must distribute the knowledge of all the truths that the nation needs in this great struggle. All the energy that is required to stifle any sign of fatigue, it is the function of the faculty to generate and to spread. Whoever else may be guilty of the least word of faltering or the slightest sign of sadness, the teachers of the nation are particularly responsible for the contagion of their spiritual atmosphere. They must be for the Fatherland, in the year just opening, the highest conscience and the surest support, while they follow the great task of teaching, which is a constant effort to realize the good.

"Just as the war has called forth for national defence new organizations in bewildering number, it calls in our work of intellectual defence for perpetual renewal and amelioration."

I submit that this is more inspiring than the recent publications of our Board, especially when backed (as I am credibly informed) by an increased Budget.

The teacher cannot do her best so long as Local Education Authorities do not believe in Education. "How comes it that we are committing so large a measure of educational control to those who have never studied education, while we withhold control from those who have made it their life work?" It is not only in one of our great cities that we cage one of our leading educationalists in the Vice-Chancellorship of the University and give him no say in the educational administration of his own city. Is not this the root of much of the evil of our Elementary System, that the teacher's master is not an expert in the business of education? It is true that the initiative shown by some Local Education Authorities has done more than volumes of special reports to raise the standard of education in the country, but nevertheless the Local Educational Administrator as we know him generally is not only not an educationalist, but too frequently glories in the fact.

Then the members of the Local Education Authority, even when able, are mostly too busy to give attention to detail, which is therefore left greatly in the hands of the Education Secretaries or Directors of Education, and is it not time that this office with all its vast possibilities was more clearly defined? We have now had thirteen years in which to decide what are the qualifications and training desirable in a Director of Education. I do not think the teacher will do her best work until the immense importance of this office is more clearly conceived as the position for a strong educationalist and not merely for a clerical or legal assistant.

Neither is it in the schoolroom as we know it to-day that the teacher can do her best. We are beginning, are we not, to think of children's communities in other terms than that of the class and classroom with a desk and seat for every child as our ideal? Surely here we may make some progress toward a more temporary type of building and cheaper furniture by realizing that floor space and light are at least as valuable and urgent as sitting accommodation. Surely we should learn more quickly from the children's movements around us, from the Boy Scout Movement, the Girl Guides, and from the immense demonstration of the strength of the children's dramatic instinct in their devotion to the cinema palace. In the best schools the greater freedom characteristic of such movements is, of course, the rule of the day, but speaking of the whole system generally, it still lies open to this accusation of the imposition of undue restraint on the child during the years when organized activity and movement mean nearly everything.

Neither is it with the curriculum prevailing at present that the teacher will do her best work. Very slowly is the approximation between the curriculum and life being made. The school must come out of its isolation and secure organic connexion with the social life around it. There is much triviality of subject-matter still common in the Elementary School. Our Universities are every day more awake to the value of research for the adult student, and our Elementary Schools must be as clearly conceived of as places of research for our children, and the child must carry over what he learns in the home and utilize it in the school, and the things learned in the school he must be able to apply at home (we can still hear a lesson on the Towns of Assam in a slum school to twelve-year olds taught by a teacher who knew nothing of the newer geography—the thing dies hard). As Dewey so well says—"We must learn how the school may be connected with life, so that the experience gained by the child in a familiar, commonplace way is carried over and made use of there, and what the child learns in the school is carried back and applied in everyday life, making the school an organic whole instead of composed of isolated parts. The isolation of studies as well as of parts of the school system disappears. The child's experience has its geographical aspect, its artistic and its literary, its scientific and its historical, sides. When the child lives in varied but concrete and active relationship to this common world, his studies are naturally unified. Relate the school to life, and all studies are of necessity correlated."

After the war one fears that there will be a great strengthening of the demand for superficial technical training in the schools unless there is some strong body of organized opinion formed to oppose it. Is it not true that it is more incumbent than ever upon us, at least in the Elementary Schools, to train both the boys and girls rather for their leisure than for their labour? Is it not true that this time of pressure has revealed the British workman as better trained for his trade than for the organization of his leisure time?



And the teacher will not come to her own as a social worker unless the Training Colleges wake to the fine opportunity that is theirs. Here indeed there is little room for pessimism. In the last ten years the work of Training has been liberalized and strengthened. Financed by the Board with fair liberality and supported by a sympathetic understanding, the colleges have earned a certain amount of freedom which they have known how to utilize. The work now attracts the best men and women from our Universities, and one rejoices in the capacity and devotion of the personnel of the staffs. Much, however, remains to be done. It is best expressed, I think, by Miss Hughes in the best chapter of her stimulating work "*Citizens to Be*."

"The demand is for the new application, and for added impetus *now*, and for the immediate concentration of its full force upon the Training Colleges. It is necessary, and it is possible, that within one generation all Training Colleges should become what some already are—a sure vantage-ground for Humanist Education, whence the whole campaign may be unceasingly directed and reinforced. At present too many of them are themselves in bondage, either through old-fashioned excess of devotion to the knowledge-ideal or through new-fashioned excess of devotion to the cult of expression. Through both these causes, and through the intolerable haste of the normal two years course, they are burdened with a curriculum which, despite its multifarious subjects, fails to achieve the breadth or the coherence or the vitality of Humanism, and misses too often that reverent yet familiar conversance with greatness which should be signified by 'culture.' While they themselves exhibit want of balance, want of appreciation and want of freedom, we look to them in vain to transmit to our schools these essential qualities of Humanist education. And where else are we to look for this national service, in face of urgent need?"

"We would urge a reduction in the number of subjects, and a richer development of those which advance not only the professional power, but also the true individuality of each student. It is in this sense that the Training College ought to be thoroughly vocational, concentrating first on the chosen life-work, which is of all life-works the most liberal and the most Humanist, and then on the special subject of individual choice, with a sufficient margin of time and energy for its true and thorough pursuit. Along this chosen line of study the student must realize that high standard of accuracy and of devotion which are at least as indispensable to 'culture' as is a wide range. Thus he will take up his life-work equipped with a double enthusiasm—for his profession and for the subject-matter of his teaching."

That is to say, round our present B group subjects we can weave a fine liberal education giving much more time to Drawing and Music than most of us at present give, attaching importance to the sense of rhythm as a factor in education, and to physical development. Adding then, in most cases *one* subject from the A or C groups which shall be studied with the "high standard of accuracy" of which Miss Hughes

speaks. And if that subject is History, as it may well be, surely for the potential Social worker it ought to be Social and not Political History. Further, somewhere in the course, either formally or informally, must come an elementary but sound acquaintance with the main problems affecting the industrial condition of the people. We do not mean an academic study of Economics but an elementary introduction to practical Sociology. This it has been found possible to supplement by the student's residence for some part of the vacation in one or other of our Social Settlements.

And what part shall we, as an Association of those engaged in the work of Training Teachers, take in the preparation of ways and means for the betterment of the Elementary School?

I was surprised to find one of my colleagues on this committee doubting whether a certain question of emergency in the schools was a question for our Committee unless some question specially affecting training were involved. I do not think we can so narrowly interpret our commission. Some of us already are wondering how much longer we can train our students on the most liberal lines we know only that they may face the conditions of which we have been speaking. It is a cruel business, this "passing our children through the fire" in that first year after leaving college, when so many "find themselves forced into a daily surrender of their own educational principles and the best results of their training. When perpetually teaching is sacrificed to discipline and the interest of the majority to the coercion of the few."

Read that depressing book, *The Soul of a Teacher*, if you do not know the tale from your own students. The removal of these conditions is vitally our question, and as an association, I submit it is time we took counsel as to how we can best bring to bear all our influence, whatever it is worth. We might count for more here even than in Experimental Pedagogy. These conditions not only dishearten our outgoing students but "deter just those who are most fitted for the work, who best appreciate the meaning of the opportunity and responsibility, from offering themselves for the work at all." One must grant it is a question of money—the smaller class and the more liberal training, and I believe to double our national expenditure on education would be a sound investment, redeeming itself, as it so soon would, in the results of an increased national efficiency.

But it is even more important at the moment to insist that this betterment is not entirely a matter of money. Not a few most desirable improvements could be carried out at less cost than the present arrangements. Thousands of pounds have been wasted on giving a solid and permanent character to school buildings, on expensive and unsuitable sites, and even a double inspectorate, national and local, is an extravagance not enjoyed by many professions. In fact although some war-time economies are most grievous, others make great admissions which should be remembered when the war is over. One of the largest authorities

speaks of relieving the schools of all unnecessary examination, of safeguarding the masters from unnecessary visitation by inspectors and other officials, and of reducing as far as possible the clerical work demanded of Heads. When more money is available it is to be hoped that these examinations and inspectors will not re-appear. Do not let us give up because little money is now available. What is needed is a new spirit—"a new national sensitiveness to spiritual fact." All the old channels want flushing with spiritual energy. Let us remember the words of the statesman, who almost alone has tried to stay the rush of false economy in matters educational in these dark days. "For the present there is little public money to be had, and those who are pressing forward will have to pursue their labours in straitened circumstances. But they will be unworthy if they allow this to damp their idealism or to dishearten them in the task of bringing home to a great democracy that a far-reaching system of national education may bring with it the solution of many and great social problems," and is in point of fact a first line of national defence.

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## THE INTERESTS OF LONDON CHILDREN AT DIFFERENT AGES IN AIR RAIDS.

By C. W. KIMMINS, M.A., D.Sc.

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### INTRODUCTION.

In a paper read before the Psychological Section of the British Association in Manchester, in September last, on the "Interests of Children in the War at Different Ages," I grouped the interests of the boys and girls in separate years from eight to thirteen.\* That investigation was based upon essays written by more than 3,000 children. The results interested me so much that I thought it would be of value to carry on a similar investigation on the interests of children, at different ages, in air raids. For this purpose the children in the schools in the immediate neighbourhood of the raids of September 8th and October 13th, have written essays under the same conditions as the War essays, namely, no preparation and only fifteen minutes allowed, excluding the time taken in the writing of name, age, class or standard, and school. Five schools, some of them containing comparatively few children, were selected, each school having two departments; there were ten departments in all—five boys' and five girls'. The total number of essays written was 945, giving about 150 essays for each of the ages eight to thirteen. About 550 papers were written in connexion with the first and about 400 in connexion with the second raid.

\* v. This Journal, December 4th, 1915.



Although the actual number of essays written on the air raids was much less than in the case of the War, the analysis has been relatively an easier matter, as nearly all the children had actual experience of one or both of the raids, and the influence of the teacher had not to be eliminated as in the previous investigation. It should, however, be borne in mind that, especially in the essays of children of eight or nine years of age, where the amount of material written is far less than that of the older children, the results of the analysis must be regarded only as approximate. Definite conclusions could only be based on far more material. From ten years of age onwards, however, many points are so clearly marked that they may be regarded as quite trustworthy.

### Results of Analysis of Air Raid Papers.

#### 8 years of age.

##### BOYS.

The boys are so excited about the large number of new experiences that they find difficulty in describing them. The descriptions of sounds in the streets, policemen's whistles and the fire engines, bulk very largely, the chief attractions being the noise and the fires. No personal feelings are expressed and there is no evidence of fear. Some horrible scenes are described. Many unimportant family details are given and extraordinary stories are told of what happened, e.g., "The bombs melted all the money in a lady's purse."

##### GIRLS.

Simple descriptions are given by the girls of striking events without mention of their own feelings. There is, however, little indication of fear. Nothing is mentioned about waking, dressing, and personal matters, which occur so frequently in later papers. Very local matters are described in simple, unconnected sentences. Some horrible scenes are referred to, and mention is made of people killed and wounded. There is noise and confusion everywhere. Everybody is screaming and crying. Even at this age they look after younger children. The girls state what they had to eat and drink before going to bed.

#### 9 years of age.

##### BOYS.

The boy of this age thoroughly enjoys the air raid. He spends as much time as possible in the streets and gives not the slightest indication of fear. He takes the greatest interest in Zeppelins, bombs, and anti-aircraft guns, and remains up until very late watching the fires. He sees and describes horrible scenes. Occasionally he expresses dislike of the wicked Kaiser and the Germans. He is so interested in all he sees that he has little time for expressions of personal feelings. He gives no account of incidents of waking and dressing, and rarely describes conversations with other people. He gives accounts of remarkable things, and talks about German spies and the men who fell

out of the Zeppelin. The descriptions of Zeppelins and bombs are very good for boys of this age.

#### GIRLS

In the girls' essays there is much more about personal matters and descriptions of waking and dressing, and the time they went to bed. A feeling of dislike of the raid is frequently expressed and it is described as terrible. Apparently not much fear is shown, and the girls slept well after the raid was over. Occasionally, however, great fear is expressed. Very little description is given of bombs, Zeppelins, and anti-aircraft guns. There is much local colour, and some of the girls went out with their parents afterwards to see the damage done, but apparently they saw far less of the raid than the boys, and there is no account of a girl going out alone. Very little mention is made of horrible things. Likes and dislikes are expressed, e.g., "I don't like German bombs, but I don't mind English bombs."

#### 10 years of age.

#### BOYS.

There is far less description of personal matters than in the girls' essays. The boy now is very talkative and relates his conversations. Here, for the first time, there is distinct evidence of fear, but it is not nearly so marked as in the case of the girls of the same age. The fires are now described fully. A broken gas main which caught fire is well described in many essays. The fear of the boy does not prevent him going out occasionally to look for bits of shell and shrapnel. At this age the boy takes his part in looking after the younger children. He describes striking scenes well, and gives more detailed accounts of the shape and size of the Zeppelins. He sits up at night and fears to go to bed. The following extracts from the essays of boys of this age illustrate some of the points:—

(1) "Mother said, 'You take Johnny and I'll take Alf.,' but as it was dark my Dad took Alf. and my mother took me. Dad fell over two chairs and mother nearly fell over the table. Now, while all this was happening my Bessie was writing a letter."

(2) "A picture over mother's bed fell on her head and on the baby. The baby went unconscious and my mother shook her and then she was all right."

(3) "My mother was very frightened so I made her laugh."

(4) "My mother was very frightened so I tried to comfort her by telling her that the Zeppelins would soon be shot down by our anti-aircraft guns. Our conversation was interrupted by another bomb bursting."

#### GIRLS.

Great changes are now seen. Girls of this age are very frightened and excited. The bellicose attitude shown in the War essays is,

however, seen in the abuse of the Germans and the critical attitude taken up on various points. Full detailed descriptions are given of waking and dressing and the care of the younger children. They discuss the place of greatest safety and think it foolish to go into the streets. Many references are made to the fireman who was killed in trying to save others. The folly of using searchlights, which guide and conduct the Zeppelins, is noted. Vigorous protests are made against German spies. There are very few descriptions of the events of the raid. All attention seems to be centred on personal matters. Though very alarmed and nervous they are thoughtful for others. Fewer references are made to horrible scenes. They go to bed in their clothes for fear the Zeppelins may return. Full accounts are given of the gatherings of people in the basements. The descriptions given are very different from those of the boys. Some of the statements in the essays of these girls are very interesting:—

(1) "Mother was out. I jumped up, awoke my brother, and told Frankie to dress himself. I dressed myself and the baby. I ran out to see the Zeppelin go over the house but was brought back by a policeman. My brother and the baby was screaming for my mother. Soon my mother returned. She had been running for her life to get home because one of the Zeppelins was overhead. She came home with her hair streaming down her back."

(2) "I was very much excited and thought that some collection should be made for the poor people who had been robbed of their homes and the things they treasured most."

(3) "The people were all running about like mad and the windows were falling out like rain."

(4) "Mr. W. had a stuffed fish in his window and a piece of shrapnel went through its upper jaw and knocked it out, but it did not touch the other part of its body."

(5) "Many people went off into stericks and others fainted."

### 11 years of age.

#### BOYS.

This is the great age for records of conversation. The boys give numerical details as to exact time of raid and going to bed, the size of holes made by bombs, the number of casualties, and so on. Good graphic accounts are given of the chief events. No sign of fear is shown. Many acts of bravery are done. Most of the boys are out in the streets all the time. A few, however, look after younger children and sometimes dress them. There is far less about waking and dressing than in the girls' essays, and far less expression of personal feeling. Comparisons are made between this and the former raid. They are keen on the work of the anti-aircraft guns, but much less now about the fires. There are good descriptions of Zeppelins. Many mythical stories are told. Much more interest is now shown in people. The boys are less centred



in details of the raid. Descriptions are given of people going to the Tubes for safety. Very few references are made to horrid scenes. Descriptions are given of families removing their savings to a place of safety. Some of these points may be illustrated by selections from the essays, for example:—

(1) "I ran downstairs and sat on the doorstep and dressed myself properly."

(2) "'Fathead,' said I politely, 'it cannot be a Zeppelin. It does not move; therefore, it must be a star.'"

(3) "My mother went into a fit, so I went out to see the Penny Bank."

(4) "My mother said, 'All keep together,' but I didn't, I ran out into the streets and saw the fire engines."

(5) "When I heard the bomb burst I got up and put my clothes on, got my bank book and my money box and went downstairs."

(6) "Mother said, 'Are you frightened,' and I said 'No.' Then she said, 'Go upstairs and turn the gas out.' I did but then I fell over a chair."

(7) "My eldest sister covered herself in the clothes belonging to her bed, but I pulled her out and dragged her to the top of the stairs. I then threw her down into my grandfather's arms."

#### GIRLS.

Very detailed accounts are given of waking and dressing. Cellars are now the favourite place of safety. Much is said about the care of children, and there is much personal reflection. Full descriptions are given of Zeppelins, which are called "pretty sights." No fear now appears to be experienced.

Girls of this age, for the first time, go out alone to see the damage done. They describe children being taken to the Tubes for safety. The Zeppelins are compared with those of previous raids. Very little is said about horrible sights. There is much local gossip and records of conversations. A few girls are unable to sleep at night. Good descriptions are given of the chief events of the raid. The bellicose feeling, now unmingled with fear, is freely expressed. The following extracts are typical:—

(1) "Mother said she didn't want to see or hear the Zeppelins again. I do. I like hearing and seeing them."

(2) "Afterwards I felt we had been mercifully saved and I then knew what our brave soldiers and sailors have had to go through day after day. This kind of thing makes one realize what war is—and yet dropping bombs on harmless people is not war. That night I felt bitter towards the Germans. Then I felt I could fly to Germany and do the same thing to them."

(3) "I think it is the most terrible crime. The lives of many innocent people were lost. We all thank GOD for keeping us safe."

(4) "I think it is very wicked indeed to do such a low thing."

(5) "I own it made me down-hearted a little bit, but I was all right in five or six minutes."

(6) "I did not feel frightened because I had seen a raid before. The raid was not nearly so exciting as the last one."

### 12 years of age.

#### BOYS.

There is no indication of fear. Very good vivid descriptions of chief events are given, with less local details than in the earlier essays. There is a great desire among boys of this age to obtain souvenirs of the raid. The collecting instinct is very strong. Boys give various forms of assistance, accounts of which they retail with pride. Many accounts of brave acts are described. Practically all the boys of this age go out into the streets during the raid. There are singularly few personal reflections. No mention is made of the best place of safety, nor is the matter discussed. Different accounts of bombs are given. They talk much about spies. A few criticisms are made of the raid, which they regard as a failure. Steps are taken to give notice if the Zeppelins return. Remarkable stories are told of men with loaded revolvers in a motor car with bright lights. Boys of this age are determined to get a good view of what is going on. They are much interested in fires. The following extracts give interesting evidence of the boys' interests:—

(1) "I was watching a lady making signs with a strong light and when the police went up she put it out and then I walked away."

(2) "The Zeppelin was about two miles long."

(3) "The bomb did not go off so I went to get it but burned my fingers. A copper came running round the corner and he took it."

(4) "Finding that I could not get to the front of the crowd to get a good view of the fire I beat a retreat. I climbed up a lamp post so that I could see it plainly."

(5) "When I saw the Zeppelins I thought at once that the time had come for me to do my bit, so I quickly put on my scouts' uniform and rushed off to headquarters. The scouts made tea for scared people."

(6) "Is this war? No! Murder. I hope to GOD they will never come again."

(7) "I was sent to find my brother, but I was so interested in looking at the damage done that I forgot all about my brother who got home before me. When I reached home I received

the news that a cup of cocoa was awaiting me indoors. After drinking it I went to bed and was asleep within 20 seconds and slept like a top."

#### GIRLS.

The girls now become very critical and argumentative. They discuss the safest place and why. There is far less going out into the street at this age. The girls think of the future, and sympathize with the sufferers, and condemn the Germans in strong language. They are much more emotional and reflective than the boys, and describe the events of the raid in far less detail. Expressions of sympathy are very common indeed. Many refer to the brave fireman who lost his life. There is no evidence of fear. No accounts are given of horrors or distressing scenes. The two air raids are often compared. There is still much local colour, and the descriptions of the events of the raid, when they occur, are very good. There is very much in these essays about looking after the younger children, but much less about waking and dressing. There are very well-marked cases here of suppressed emotion. Much is said about the social life in large blocks and the meetings of numbers of people in safe rooms. Precautions are taken in case the Zeppelins return. The attitude of girls at this age is well shown by quotations from the essays:—

(1) "The thing that seemed to stop my nerves most was hot cocoa."

(2) "All the street lamps were put out—a very silly thing indeed—for the intense darkness can be as easily observed as bright light."

(3) "The best and safest place during a raid is in the hall with the door open."

(4) "The excited people ran about like mad bulls and mothers were clinging to their children as if they were the only things to care for."

(5) "As I stood there listening to the bombs I thought of the soldiers on the battlefield hearing those bangs all day."

(6) "It was a solemn funeral and when the scout played "The last post" I had to cry."

(7) "After the Zeppelin had gone, I felt all right again, but I don't want any more shocks."

#### 13 years of age.

#### BOYS.

The most striking point of advance here is that matters of more general interest are described. There is much less local colour. The descriptions are well written, but there is very little personal reflection, and curiously little about the home and the other members of the family. It is evident that boys of this age go off by themselves, and take far more interest in the raid than in the affairs of the family. Frequently,



however, records of bravery and kindly acts and the protection of young children are given. Sometimes the boy takes up a rather superior attitude, and Zeppelins are described as midnight marauders. There are now hardly any records of conversations. The boys are more than ever interested in the doings of the anti-aircraft guns. Throughout the essays the boys of this age prefer to describe what they saw without comment. The girls prefer to tell what they think about matters. The great variety of interests may be shown by the following:—

(1) "During the raid a lady, who was having a drink at the Dolphin, was found to be missing. A search was made for her."

(2) "When I heard the bombs I said, 'Put the light out.' My mother started asking questions, 'Why?' and 'What for?' Without hesitating to answer I jumped up on a chair and in a moment we were in utter darkness."

(3) "I was cleaning a stove when the room was lighted up by a lurid glow followed by a bang. 'Zeppelins!' I exclaimed and straightway rushed into the street. There were women fainting and going into hysterics, children screaming and men cursing and special constables shouting, 'Put out your lights'."

(4) "A man looking through an opera glass saw a splinter of a shell hit the Zeppelin on the side."

(5) "The air raid was a failure, the idea being to frighten the people of London. It did not succeed the feeling being one of curiosity rather than of fear."

#### GIRLS.

In the essays on the War the girls gave evidence of abnormal maturity at the age of thirteen. This is fully confirmed in the essays on the air raids. Frequently there are good vivid descriptions of important events of the raids, but the main interest is the effect they produce. The general verdict is that they will do good because they show us what war really is, and because they will aid recruiting. The girls show far more emotion than the boys, and on the whole, they have greater facility of expression. There is not the slightest evidence of fear. There is much about the care of children, and it is evident that, when the mother is absent, the girl of thirteen is quite capable of taking command very efficiently. Evidence of the bigger outlook of the girl at this age may be shown by selections from the essays.

(1) "We heard a terrific bang. I ran to pick the baby up. My sister ran downstairs and my aunt ran to pick her twins up."

(2) "The raid leaves some people homeless and penniless, but, of course, it is not so bad as losing your life, because you cannot buy a new life, but you can a home."

(3) "I don't think another air raid will cause us as much panic as this one."

(4) "The raid has turned some people very nervous and every little bang they hear they jump and turn white. That is not very good for people."

(5) "Air raids are good because it makes people feel what our soldiers must suffer."

(6) "Still, I think the raid was all for the best, because it made us realize we had the war so close by."

### **Mothering Attitude of Young Girls,**

Throughout the papers the mothering attitude of the girl at times of extreme danger finds full expression. The protection of the more helpless seems to be her first concern.

(1) A child of nine, who had been in the street when the raid began, went up to her bedroom on reaching home to bring her teddy-bear into a place of safety.

(2) A girl of eleven, whose mother was out, dressed her little brothers and sisters, put them in a place of safety, and afterwards put them to bed again before the mother came home.

(3) A girl saw a woman she knew, whose house had been blown in, with twins clutching round her dress and a baby in her arms. She took the twins and told the woman to come with her, and she took them all into the Keep Smiling Club, where kind ladies gave them some hot tea.

Even the animals are looked after by these girls in times of danger:—

(1) "Our dog had a fit after the raid was over."

(2) "Our dog kept crying and my sister bought him a half-pennyworth of milk, but he would not drink it, so we took it ourselves."

(3) "Our dog kept up an awful row and almost upset the office table."

### **The Philosophic Attitude of Young Children.**

It is very remarkable that at exciting crises of a child's life we find him pulling himself together and making important decisions with regard to future action, which would do credit to adults.

(1) "I was a bit frightened when the bomb burst, but still we have only to die once."

(2) "I could have seen the Zeppelins, but I thought if I do I shall always see them when I look up into the sky, so I would not look at them."

(3) "My teeth were banging together, but then I remembered that our lives were mapped out for us and GOD's will must be done."

(4) "The first thing I did when I heard the crash was to get downstairs as quickly as I could keeping quite calm and cool until I reached a place of safety."

(5) "The lady next door had a crippled boy who was ill and couldn't leave his bed and he said, 'You go down into the cellar, mother, and I will keep here. GOD will keep us all right.'"

### **The Small Part played by the Father in the Family.**

One of the most striking facts which emerge from the consideration of these essays is that the father plays, from the point of view of the child, an extremely unimportant part in the family life on such occasions as an air raid. In ninety-five per cent. of the papers no references are made to him, and even then the references are not flattering, for example:—

"My father was very frightened during the raid and ran into a beer shop and got under the counter and stayed there until it was all over."

Men, apart from those taking part in the activities of the raid, such as policemen, soldiers (especially gunners), and firemen, are rarely referred to, and then often in uncomplimentary terms:—

(1) "A man came into the public house and said, 'Give me half a pint. If I am going to die I'll die drunk.'"

(2) "A gentleman who was with us fainted, but we soon brought him round."

### **Social Life in Lodging-houses and Blocks.**

Very interesting glimpses are obtained throughout the essays into the social life of people living in large groups. There is much evidence of the kindness shown to those who suffer in the raid. The woman who has large, comparatively safe rooms welcomes her friends and acquaintances from rooms in dangerous positions, and groups of twenty-five to thirty people are not uncommon. The appearance of these late visitors is variously described:—

(1) "All the ladies and gentlemen were in their night dressing costumes."

(2) "The people from upstairs came into our room. They were in their night gowns most of them with no shoes or stockings. It was a dreadful sight."

### **The Danger of Suppressed Emotion.**

The children who suffered most during the raids were girls generally of about twelve years of age, who were really very much frightened, but who for feelings of pride or other reasons did not show it. The girl of twelve, who said she cried and cried until she couldn't stop crying, went out with her mother as soon as the Zeppelins had gone and saw the sights, and probably slept well afterwards. The girls who suffered most were those who had experiences similar to the following:—

(1) "I was terrified but did not show it, but afterwards I started up each time I heard a noise. For two nights after I kept in my clothes and my nerves have never been right since."



(2) "I did not make any fuss although I was rather frightened, but next day I could not seem to settle down to my school work."

(3) "My mother told me it was only the guns practising, but I knew quite well what it was. I could hear the bombs bursting. I tried to be quiet and asked her for a book to read, but I kept thinking of the poor people who were killed. A week afterwards I could hear the bang of the guns in my ears."

(4) "I tried to speak to my brother but my lower jaw seemed stiff. I was awfully frightened because my brother and I were alone in the house. It was a long time before I could sleep and every sound made me jump."

### Graphic Accounts of Events.

It is a matter of great regret that the power of graphic relation of events so often found in the essays of school-children of ten, eleven and twelve is frequently lost in later years as they become more self-conscious. A similar loss is often seen in the pictorial illustrations of stories. In these essays the most vivid and interesting descriptions are found in those written by boys and girls of these ages. The following are a few examples:—

(1) "I sleep in a room at the top of the house in the same bed as my sister. When I heard the bombs bursting I called to my sister but there was no response. I then put out my hand and found that the seat was vacant. My mother then rushed upstairs and told me to come down in the kitchen. I went down a few steps but feeling cold I went back to bed again. My mother then rushed up into my room and carried me bodily downstairs into the kitchen where I saw many friends. I said, 'Why all this excitement?' and they said, 'The Zeppelins have come,' and I said, 'Good gracious! You don't say so!'"

(2) "I was startled out of my sleep by my mother saying, 'Erne, the Zeppelins are here.' I jumped out of bed and rushed to the door, snatching up my trousers in my flight. I went downstairs as hard as I could followed by my father and my mother in hot pursuit. When I got into the street I put my trousers on."

(3) "On the night of the raid I was coming out of a cinema with my uncle and I noticed that the people were rushing to and fro in the street. I went up to a policeman and said to him, 'What does all this mean?' and he replied gravely, 'The Zeppelins have come.' 'What!' I said, 'Do you mean to tell me that those terrible monsters have come at last?' and he replied briefly, 'They have.'"

(4) "Suddenly a piercing beam of white light shot across the sky. The guns spat viciously out of the darkness at a cigar-shaped body far up in the clouds."

### General Remarks.

There are many important points to be noticed on summarizing the interests of boys and girls of different ages in air raids:—

1. The girls are throughout more reflective than the boys. They like to comment on the exciting events passing before them, whereas the boys are generally satisfied with descriptions without comment.

2. The essays of boys and girls of eight years of age deal almost exclusively with local matters in unconnected simple sentences without any indication of the relative importance of events.

3. The tendency to describe the more horrible scenes in connexion with the raids is largely confined to children of eight and nine. When the subject of the essay is viewed as a whole, the description of horrible scenes and local details passes into the background.

4. Although throughout the boys' essays it is customary to describe events without comment, there is a well-marked tendency to record conversations with people at eleven and, to a less extent, at ten years of age.

5. The first indications of fear are seen in the essays of girls at nine, rising to a maximum at ten years of age, after which they only occur sporadically. In the case of boys, expressions of fear are almost exclusively confined to the age of ten.

6. Girls of nine and eleven and, to a less extent, of ten years of age describe in detail the events of waking and dressing and the care of younger children. Comparatively few references are made to these matters by the boys.

7. With the exception of the period of about ten years of age, when he suffers from fear, the boy evidently enjoys the air raid and likes to spend as much time as possible in the streets. The girl, however, does not go out alone until the age of eleven. Throughout, she sees far less of the raid than the boy.

8. At all ages the mothering instinct of the girl is clearly shown, and from eight years onwards the proportion of the description of home affairs tends to increase. With the boy the reverse is clearly seen. Matters of the home interest him less and less from eight to thirteen, as compared with the other events of the raid.

9. Following the period of great fear at the age of ten, the girls give unmistakable evidence of a bellicose attitude at eleven, followed by a well-marked critical and argumentative phase at twelve years of age.

10. Boys of eleven years of age seem to be particularly interested in numerical details. They give the size of holes made by bombs, the exact time of going to bed, the number of casualties, and the size of the Zeppelins. They also compare the two raids. To a certain extent at this age, but more especially at twelve, the collecting instinct is very strong and the boy collects souvenirs of the raid.

11. Girls of twelve, who are really nervous but are too proud to show it, are in danger of suffering from the effects of suppressed emotion. The comparatively few cases of this kind recorded are nearly all of girls of this age.

12. In these essays the evidence of abnormal maturity and broad outlook of the girl of thirteen fully confirms the opinion based on the previous investigation on the interests of children at different ages in the War.

## FORMALISM AND EXPERIMENT. II.

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IN a former section of this article (last number of Journal, December, 1915) four different aspects of the nature of formalism in the theory and practice of training were indicated. The fourth of these was set out in the quotation from Baldwin's Dictionary:—"Stated simply, the theory known as formal training declares that mental power, however gained, is applicable to any department of human activity." My thesis throughout these articles is, that if "formal training" makes this declaration it is the least of its offences.

With the hope of disproving this proposition, and even of measuring "the transference of mental power," a variety of experimentation has been attempted. It appears to the writer that the form in which the problem is put, the path it has taken in discussion, the means employed to refute it, the assumptions and presuppositions so freely made in a number of statistical inquiries, and the conclusions that readers are invited to accept, are, in the main, inconsistent with and even opposed to the ground upon which the other three views of the problem rest.<sup>1</sup>

Now, as it stands, the statement is highly ambiguous. As a proposition in science, as an attempt to focalize a problem in mental economy, to define by implication, the thing is unsatisfactory. It is not even a fair way of putting the empirical generalization to which it endeavours to give exact formulation; and as a point of view of the studies which should be preliminary to the construction of the school curriculum it is almost useless.<sup>2</sup> On the terms as set forth there is nothing in the enquiry. Any merit it may have in this experimental shape has come from the employment of principles and truths, mostly psychological, which are in no sense the findings of the experiments. The method of experimentation chosen has neither refuted, confirmed, nor measured the influence of any line of human experience on any other. Any plausibility the figures may have comes by the experimenter using their vagaries to confirm his prepossessions.

At its best, experiment in teaching methods, or in school organization, or in a system of education in general, is an attempt to appraise the value of a well-thought-out scheme, carried through over a stretch of time, in terms of human character. Pedagogy must make the venture with other human inventions if it is to justify its words. And

<sup>1</sup> Mr. Holmes would, I imagine, cite this experimental inquiry as formalism at its worst.

<sup>2</sup> If we may judge by results in this direction, Dr. Sleight has spent a good deal of time in attempting to apply the results of his experiments to the framing of a curriculum. He finds, as a result of his inquiry, a criterion of value for school studies:—"The one criterion we must keep before the mind is that of relative importance of the material in life—in other words, its relative intrinsic value." (*Educational Values*, &c. p. 137.) When an investigator is driven to phrases like "relative intrinsic" it is time for him to turn back and to ask himself whether there is anything at issue, any question to be answered; or whether he has not been deluded by the appearances of the problem. We are no nearer the middle of things by substituting "relative intrinsic value" for "useful information." We have still to ask "relative to what?" as formerly "useful for what?" had to be asked. "To life," Dr. Sleight answers. "All the offices of peace and war." And the bulk of what he has to say about his curriculum will stand quite apart from the irrelevant enquiry he took so much pains with.



to begin with, it must cut itself away from academical discussion, i.e., from the dialectics of the philosopher's classroom. It is not to be thought that this is ever quite possible. I mean that the exposition of many of the problems of knowledge, its genesis, development, and functions, which are still the subject of polemical discussion, and are likely to remain so, even in the most exalted philosophical circles, will influence and has influenced our opinions on the structure of school curricula and on the pragmatics of school life. A charitable view of the experiments now under remark may lead us to suppose that this was the aim of the experimenters. Impatience with the academic and pseudo-philosophical discussion of the "principles of education" drove them to cut out what they conceived to be the root problem, and to experiment *ab initio* upon it, untrammelled by prejudice. Their selection of a problem and their statement of it has not been happy. Their treatment of it is more unfortunate still. Another view of the matter, however, may be taken. It is impossible to read the great number of articles and chapters produced round this topic without coming into contact with the hot ashes of a number of theories, chiefly in the theory of knowledge; such, for example, as a definition of memory, and whether original power of retention may be improved; the theory of concepts and their relation to their factual bases; the use and limitations of the distinction between form and content; the function of imagery in mental economy; the theory of habit; the question of valuation, and so forth. Indeed, the list may be extended to include every term in psychology and every vexed question in epistemology. And it is worth remark that experimenters have realized this in the development of their theses. For in the long run a completely-stated theory of training is nothing more or less than a theory of experience, the question of the beat of life from point to point; and, as the necessity of reference by the writers to these theories has shown, not merely the trivial question as to whether the faculty psychology should be abandoned. To go up against the pundits who guard use and wont in the groves of the Humanities with this simple accusation, that they are the victims of a psychological illusion, and this is proved by experiment, is like Adam going out to meet Satan. Singularly enough, many writers on this topic of formalism, particularly beyond the water, who are deeply influenced by the turn that pragmatism has given to several of the topics mentioned, imagine that by refuting the theory of faculties and calling upon the name of "function" they thereby destroy the use and value of methods of training which exist and persist simply on their pragmatic merits.

However these things may be, there are many who share the general unrest, and are not quite satisfied by use and wont. These desire reform: in the curriculum if the fault is there; in the methods of instruction if the weakness is there; in the equipment and training of teachers if they are poor; in the organization of the whole system if that is bad; in the national spirit that should control, inform, and

animate its own nursery. It is, then, in no mere obscurantist spirit, nor with a desire merely to carp, that one ventures to offer a protest against some of the methods and conclusions that stand under the name of Experimentation. But obstinate questioning will arise as to whether the experiments devised and conducted on this topic of formalism have established all that is claimed for them: whether the theory, if there is one, built upon the evidence they offer, will bear any weight of criticism. One may perhaps be forgiven, but to the writer many of the claims put forward appear ridiculous. Indeed, it may be asked whether such experiments can touch the most vital issues of the problems of conduct involved; and whether we must not look to wider experiments in the whole structure of educational organization and in school-keeping, in the past and now going forward, now under formulation and under trial, for anything like satisfactory witness in this case. So far as one can see, the experiments for which most is claimed have given us a little doubtful psychology and a proposition in metaphysics that is quite untenable.<sup>1</sup> A curriculum has been offered in one case that is justified, so far as it is justified, by principles and conclusions that cannot be claimed as being demonstrated by these or any other experiments in the laboratory sense of the word. It is not unfair to compare these fruits with, let us say, the two expositions that Mr. Holmes has given us, or with the records of the Fielden School. The reply may be made that the experiments are a necessary preliminary study to the setting out of a school or system. And to that it may be replied that as a preliminary study they offer nothing that was not known:

<sup>1</sup> The proposition referred to is that "transference" proceeds through similar elements. The law is said to run that the effects of all training are specific, but may be effective where similar elements are detected in the test. Prof. Thorndike has given the principle a quasi-mathematical formulation—"The change in the second function is in amount that due to the change in the elements common to it and the first." There is something oracular about the deliverance. It is not quite clear whether the elements are changed, or that there is an interchange of elements, or whether in proceeding to the second function the human mind proceeds through elements it has met before, and will have nothing to do with elements that are dissimilar to the elements in its present "function." Whatever happens it appears a sad pilgrimage; the most awful form of determinism ever contemplated by the most hopeless Calvinist. It has been symbolized so:—We may represent three "functions" by (1) *a b c d e f*, (2) *a b c d e x*, (3) *a b q r s t*. Human nature is such, then, that if (1) represents the "mental basis" of a piece of experience, a state of mind, and (2) and (3) represent other states of mind, then the mind which may be constituted in these separable states of consciousness will more readily pass from (1) to (2) than from (1) to (3). And the degree of agility may be represented as 4 is to 1. Moreover, the mind will, we must suppose, always take the 4 to 1 chance. It is difficult to take this seriously. On the finding of the experimenters themselves, and they should know something about the experiences they deal with, the rule is quite frequently confuted. Considered as a psychological maxim it is surely trivial, and the symbolism ridiculous. In the example taken, *a* might represent a system of relations in each case compared with which *b*, *c*, *d* and the rest are impotent. Must we suppose that these experiments, with all their dubious data, have not only settled contention about training and its effects, but have put an end by mathematical demonstration to such long-standing disputes as the theory of analogy. It's an exciting discovery to realize that the poet's eye, in a fine frenzy rilling, is agitated by phalanxes of similar elements—motor and otherwise. A small girl of four was asked why she could not play "God save the King" on a penny trumpet. "Well, you see, you can't get round the corners with this blower," said she, seeing the similar elements.

We may look at the matter from another angle. The greatest degree of similarity will be accompanied by the minimum of difference. In experimental terms this would be secured by successive efforts of practice in the same medium, e.g., in successive attempts upon a table of dates, or a line of nonsense-syllables. Or are we to count these as identicals? If we go by numerical results they are not identicals, for the successive results differ. The only possible identicals are the repetitions of an absolutely fixed habit, supposing there happen to be such things. But as we approach the habit stage we find the numerical difference between successive "functions" growing smaller. Diminishing returns with greater similarity. But this is a special case—"a peculiarly exceptional one," as Dr. Sleight puts it. Yet it is a perfectly just argument from the law. As we approach a blameless similarity we have a maximum amount of transference. The maximum amount of similarity seems to come just as one function topples over into identity with the other. Substitution in general proceeds on these lines. It's a nice metaphysical problem. We may be quite sure the experimental results do not settle it.

To begin with, the statement quoted is soaked in ambiguity. What, for example, is "mental power"? Are we to understand that mental power does not exist? Or that it is to be accounted for in terms of facts known? Or is it some vague quality like a "possibility of function"? Again and again in these experimental records one comes across charges of a blind faith in "faculty"; charges of the hypostatization of absolute functions under the cover of general terms which may cover a wide range of processes differing in aspects that are of importance from the point of view of a statement of theory. There are many ways of committing the same sin. A survey of the objections to "formalism" as enunciated in a number of these records, of the conclusions we are invited to accept on the evidence of a series of figures, and of the theories of training that, we gather by implication, are favoured, reveal exactly the same process. They cannot exist without it, just, as they say, the benighted dogmas of the victims of faculty cannot. We may fairly ask of an experiment, What is it designed to show? What mental problem is it the outcome of? the necessary ratification of what line of reasoning? the crucial test of what contending claims? the means of securing facts necessary to the completion of what theory? There is a statement touching these queries in Dr. Sleight's recent book. "The object of the experiments," he writes, "was to ascertain the direction, the amount, and the causes of a possible transference of memorizing power from one type of material to another; in other words, to discover whether the memorizing of certain kinds of material aids in any way the memorizing of all other material; if not, whether it helps only in memorizing certain other and different material; and if so, what kind of material is affected, to what extent the improvement occurs, and to what causes the improvement is due." It can be said with perfect truth that not one of these questions is clearly answered by the experimental records. The direction, the amount, the causes—a dramatic crescendo—the extent of improvement (and even then improvement is only half the question), are not revealed. The one thing morally certain is that the method of experimentation chosen has failed to help us to anything that was not known before. And to accept the figures as a verification of whatever view we might have of memory—another ambiguous term—or of any other psychological problem, is to beg the whole question. It is only by dismissing all previous theory as *a priori*, that effective question-begging epithet, that any justification of many of the inquiries can be found.

The claim is made, however, particularly by Prof. Thorndike and Dr. Sleight, that their experiments have revealed new truths in the theory of training, i.e., new revelations in the theory of mental process and new maxims for the guidance of practice. "These newly-discovered laws of mental training," is the language used.<sup>1</sup> The first of these is that the various lines of experience which we may be able

<sup>1</sup> Sleight, *op. cit.*, 129.



to distinguish in our own or in anybody else's mental outfit, and partially to describe, are more separable and more specific than some of us were inclined to think; that one line of experience does not fuse with and become co-ordinated with other distinguishable aspects of our lives quite as thoroughly as an older philosophy, or one not quite so very modern, asserted they did; or generally that experience in total is a much less organized totality than the faith in an Absolute might lead us to assume.<sup>1</sup> It seems odd that one should wait for experiments of the kind we are considering to persuade us of this. Possibly the hopeless definition of formalism quoted has something to do with the conclusion. And taking the figures through the whole of the records mentioned, we may say they support the view. But inside the general sweep of numerical results we find unexpected returns; surprise results, not altogether few in number, that tally exactly with the surprises we meet in life—the odd cases that always keep the empirical law in its place. But even this happy consilience does not give us a *new* law of training. It was felt by many and acted upon before these experiments were tried. Do these lists of figures convince one the more of it? May we regard them as being a verification of such a law?

But if we extend our list of records it will be found that they are not quite unanimous about the specificness of the different kinds of conduct tested. Certainly the degree of specificness is left highly ambiguous. Over against the two experimental records mentioned there are three or four quite notable attempts that show "transference in a considerable degree," viz., those of Meumann, Winch, Fracker, Coover and Angell.<sup>2</sup> This latter group of studies, and a number of others of less weight, show considerable signs of the influence of the practice upon the test results. The former show much less. Indeed, there is a sharp cleavage between the results of the two groups. But within the borders of each inquiry there are exceptional and anomalous results. We are, then, not a whit nearer demonstration or measurement of the faith or conviction that may be in us, whether we get it from philosophical theory or from common insight. The only certain conclusion from the total results is that we do not know how far one kind of experience may affect another, or in what ways, or upon what occasions. The figures in both groups of studies—and this, I think, is true of the Meumann results as of the rest—discountenance any hope of a completely vicarious training; a proposition which was dismissed in the first part of this article as one of the assumptions gratuitously made by certain experimenters. In general, the results fall in with the counsel of common prudence, that, if we

<sup>1</sup> The writer suggested in a former article in this Journal—June, 1915—that some at least of the pioneers in this enquiry were confusing the uniqueness and imperviousness of individual personality and character with the state of organization or lack of organization of experience within the personality.

<sup>2</sup> A brief critical review of all of these will be found at the beginning of Dr. Sleight's book, "Educational Values and Methods." The essential figures are there given.

wish to learn anything, we had better attack it directly—not a particularly revolutionary doctrine. Their results, interpreted aright, show us that while we are learning what we most desire we are also learning something else. And this we knew before. They confirm the paradox that occasionally the best way of learning one thing is to attack another ; which is no more than a confession of the limitations of our powers of discrimination. They do not indicate any law or general tendency which may enable us to determine the effects of a course of instruction, let us say, in one kind, upon a course in another kind. For this we must still rely upon our power of analysis and introspection. They do nothing to remove prejudice

It was remarked that experimental inquiry may be regarded as an attempt to settle the contending claims of this subject or that for a place in a curriculum of studies ; an attempt to begin *ab initio*, free from bias and proclivity for this method of schooling or the other. Indeed, in face of the claims made for every subject in turn, it seems a fair prospect that we should make an appeal to some other court to settle the dispute between value as discipline and value as knowledge. The obvious course would seem to be to experiment subject by subject, since subjects are the units in dispute. Why were not then complete subjects of instruction chosen ? A casual inspection would reveal the difficulty of agreeing upon a test or tests which should be fair to the observers in the different groups.<sup>1</sup> There would be further difficulties for the experimenter. The experiment would take time, even if a parent could be persuaded to allow his child to be swaddled by a bloodless investigator. And even then it might be necessary to secure some kind of a dispensation from the law to establish the kind of surveillance necessary to make a convincing experiment. After that, nobody would think of accepting whatever results might be declared as being any other than particular to the victim concerned. But the itch for experimentation overrides these objections. And so tests and “practice material”<sup>2</sup> are devised, fragment of common pedagogical practice and odd and ingenious mental quizzes made to do duty ; while the time of exposure is contracted to a college-term’s space. Further, the individual observer becomes of secondary importance to the lists of figures that are desirable for the application of the approved statistical devices. The number of these observers is increased so that irregularities due to chance cancel one another on an average being struck. These mathematical arrangements do not concern us just now. What one desires to know is whether this experimentation upon these tests can be taken as a just and proper parallel to the total experience secured to a pupil by a course of teaching in any school subject, e.g., in Latin, or English, or Science?

<sup>1</sup> Prof. Adams has trailed this ground in his chapter in the *Herbartian Psychology*. See pp. 108-9.

<sup>2</sup> The following are some of the tasks selected for a course of training, or as tests : learning lines of nonsense-syllables, sorting cards of different colours, judging the intensity of sounds, reproducing a line of letters, or of figures presented orally or visually for a brief span of time, cancelling all the e’s or a’s of a page of print, learning to repeat passage of poetry, learning to say the gist of a short passage of prose, and so forth.

Supposing that everything that may be desired is demonstrated mathematically, can we universalize the results and say they apply precisely to what are known as "the subjects of a curriculum"? Allowing for a moment that subjects of a curriculum are the objective absolute things—a ridiculous notion—that some experimenters seem to regard them as, is there not something more in them than in any of the contents of these experiments? Is there not a very false abstraction used when it is supposed that the tasks mentioned are thought to be equivalent in their psychological nature to the experience of a course of study and teaching in any school subject? "These samples were chosen," writes Prof. Thorndike, "because of their representative character, i.e., they are representative mental functions, and because they are adaptable to quantitative interpretations and partly because of their convenience." The "samples" are tests in estimating the size of different shaped figures and in "spotting" words containing certain letters. "The experiments," he remarks elsewhere, "seem to be fairly good ones, for they cover processes comparable to the training in school life." There is no essential difference in the tests and practice selected by other experimenters—excepting Mr. Winch.<sup>1</sup> Now, even if these tests are suitable for experiments, and can be made to reveal a mathematical formulation of the influence of one on another, can we forthwith apply the findings to the practice of instruction? Supposing that what is claimed for these results holds good for the matter they deal with, do they hold good for the commonly-accepted parts of a school curriculum? They may by faith, but certainly not by science. We are to assume, apparently, that these tasks of practice and of tests are perfectly analogous with the common experience of school training. Some of them are, indeed, fragments of the mechanics of expression; and some separable devices in method such as are found in common practice. The whole of a subject of instruction is to be summed up in them, and what is true of the part is true of the whole!

But waiving this point, we may turn back to the one general conclusion we have discussed so far, viz., that separable experiences are specific. We may further assume that the particular form of experimentation used, and the statistical devices employed, are as effective as their users believe in meeting the particular kind of variables met with in what are complex mental phenomena. Allowing these things, we may ask whether there may not be other forces of a general nature which might mitigate the austerity of this specificness. There are two, viz., duration and "atmosphere," i.e., degree of geniality of conditions under which the work is done. One may assume that the time factor is of real and definite moment in the growth of experience. It is not merely the extent of the factual basis that makes an effective experience; that is true, narrowly and widely, of a concept in the technical sense, and of a character in the human sense. The working

<sup>1</sup> I would like to be understood as leaving Mr. Winch's experiments outside the scope of these remarks.



value of any notion cannot be exhausted by counting the number of times of its use, or the variety of bases to which it is applied or subsumes. Over and above these there is the factor of duration. So far as objective time is concerned the duration of the experiences selected for experiment is the one factor in all the mass of variables that may be measured definitely. The length of the training periods is stated definitely and measured by a standard. It is never very long: half-an-hour a day for twenty or thirty days. We shall come to these figures presently. The time occupied by each test in turn is very brief. May we expect that a longer period of practice and a more leisured attack upon the tests would produce a greater difference in the variation of result from test to test in the same series? There is no clear evidence on this point in the experimental records. So far as figures are concerned the results are anomalous. They may be explained away by an examination of the nature of the practice and of the tests. In so far as these may, within a comparatively short time, be reduced to a motor-habit or a useful mnemonic device, duration may not be a matter of any moment. The practice given may be sufficient to bring the habit to a maximum efficiency. This will lead to our second point of "atmosphere." To keep to the general question I am urging, we may ask, "Are we justified in believing that we will get anything like the same results, if we can get any reliable numerical results at all, the same degree of specificness, the same absence of "transfer" from a training extending over a number of years in an organized body of knowledge, even supposing that we are at liberty to call a study of English, Latin, Science, or what not, no more than knowledge? The things are scarcely comparable, i.e., the experimental evidence is of little value in the main point at issue.

The second general condition suggested was "atmosphere." Leaving over the question whether any machinery of experimentation or any mathematical treatment of results can check all the factors involved, may it not well happen that the more perfect the machinery, the more stringent the regulations for securing an exact inquiry, on the analogy of experiment in physical science, the further we get from conditions that are at all comparable with the conditions secured by genial teaching? Much is made by certain writers on this topic of formalism, of ideals; a recognition of the fact that mental activity cannot be accounted for in terms of habit only, and that "progressive familiarity" with the material dealt with involves a creative power that may and does hold habit in fee. Ideals are present even in the prosecution of the tasks we have mentioned. But, we may ask, can they become of anything like the same weight and value, of equal dynamic power, with the ideals that are bound to be engendered even in the most dismal form of any humanistic study? Can they cover the same stretch of conduct as the tendencies and purposes that may be engendered by the study of literature or mathematics, or by the contemplation of the common conduct of those about us? We are

not at liberty to hypostatize ideals as ready-made objects of contemplation. They grow subjectively, as the knowledge of any "subject of instruction" grows. May we expect any of the springing emotions, in which ideals are rooted, of a growing boy or girl to find food for the development and cherishing of any effective ideal from learning nonsense-syllables, or fixing points in a circle, or remembering a list of numbers or dates? In general, the feeling-tone of the experience of learning nonsense-syllables for a number of successive days must be highly disagreeable. And the like applies to tables and dates, and even to the learning of poetry by rote. Every motive of action is contingent; to please the teacher or to do better than somebody else, motives which no teacher would despise. But no teacher would care to say that the experience that pupils get from their lessons depends entirely upon contingent motives. The bulk of these tasks are surely "relatively intrinsic" in a highly-negative sense. But if we cannot believe that the tasks used for experimental purposes do allow for the spring of first-hand motives, we cannot agree that "the tasks selected and the mental operations engaged are such as children use in school time." Children do engage in tasks similar to some of these, but not, let us hope, so utterly cut away from a wider sphere of experience. It is scarcely a justification for their use to say that reactions of this kind are suitable for experiment. This may be true for these abstractions, though even in this, one may beg leave to remain unconvinced. But in this quest of formalism there must be no abstractions, for every psychical disposition in the being of the observer is a potential force in any movement that may be described as "transference." Laboratory experiment of the kind here dealt with cannot cope with all the forces involved. The further experimental checks are pushed the greater the possibility of the inhibition of some of the springs of mental activity. The care, precision, and striving after exactness of conduct in the observers (for that is what the application of experimental conditions must come to), the strict observance of machinery, seems bound to affect observers, particularly when they are children, in the direction of making them "nervous." That is to say, that a mental condition is induced which is, on the whole, inimical to the production of results which are truly representative—allowing that figures ever can be so—of the undertaking that has to be measured. The very conditions of experimentation would seem to inhibit and destroy other conditions which are powerful and effective in the freer flow of school instruction. If there is anything in this point of view the conclusions of the two records that one has most in mind will need correction. There will be

"more transference" than they found.<sup>1</sup> The experimental atmosphere will, on the whole, be less favourable to mental enterprise and concentration on the essential task than under normal conditions, and, *toto cælo*, different from the atmosphere that comes of inspired instruction.

So far one has sought to do no more than offer remarks upon the general results of the experiments. We may believe that most of the experimenters worked to secure general results. Indeed, Prof. Thorndike insists that general results are all that can be secured. We believe him. They have been indicated and were known quite as well before experiments of this kind were attempted.

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## WHAT IS THE ORTHODOX VIEW ABOUT ATTENTION ?

BY PROFESSOR R. L. ARCHER.

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THREE years ago, Professor Welton, in his *Psychology of Education*, gave a new definition of Attention. He thereby raised an issue which went far beyond a mere question of definition or the use of words. Throughout the book he holds a consistent theory of the progress of education; his view of attention is in harmony with that theory, and no other view, we believe, is. His general theory is, we think it may fairly be said, representative of what is now regarded as orthodox. We have all abandoned the cult of "chalk and talk"; we all believe in the efficacy of the pupils' activity; we all call out for an evolving of purpose. But there is little evidence to show what is the orthodox view of attention now commonly taught in our training colleges, whether it be this view, which alone appears to be consistent with the changed views on education as a whole, or that we may call the orthodox view of the psychologists, which seems to be inconsistent with them.

The text-books which our students in training presumably use may be divided into four classes. First, there are text-books of psychology proper, such as those of James and Stout. Secondly, there are

<sup>1</sup> This point may be illustrated by reference to Dr. Sleight's account of his experiments. I may refer readers to the formidable list of general precautions taken to secure uniform behaviour on the part of the small boys and girls who formed the groups of observers. They are given on p. 66, *Educational Values*, &c.

Dr. Sleight makes it a point of criticism of Dr. Meumann that the latter's work is lacking in scientific exactness. Compared with Dr. Sleight's it is, indeed, sloppy, if the word may be forgiven. But for all that it may be that the Herr Dr. got nearer to the heart of the matter than Dr. Sleight. The latter's is a statistical enquiry, a measure of probabilities. The other is a direct psychological investigation, the evidence being supplied by, for the most part, trained witnesses. It is no criticism of an investigator who is anxious to secure introspections under certain conditions that he does not take precautions that may be necessary for a statistical enquiry. It is quite an open matter whether, even in a statistical enquiry, upon figures that represent human motives, a highly-elaborate machinery is of any service. In this particular inquiry one fails to be convinced by it. For after all the machinery there are the most glaring anomalies and exceptions in the results. My point in the paragraph above is that "atmosphere" is an unknown variable that may have a very pronounced effect upon numerical results when children are the observers. The case differs for adults.



the books which call themselves "Psychologies for Teachers" of the older and pre-experimental type. Thirdly, Professor Welton stands in a class by himself, as being thoroughly conversant with experimental psychology, but on the whole inclined to distrust its influence. Fourthly, there are the books on experimental psychology, such as Myers and Whipple, or on experimental pedagogy, such as Meumann, and the text books based on them, or influenced by them, such as Rusk or Sandiford, or at least containing a large amount of matter which would not have found a place before the experimental movement. Even if we omit the second class, the first and the fourth all weigh down the scales on the one side, while Professor Welton alone stands on the other. Moreover the writings of the Experimentalists, to whom it is necessary for all to subscribe who do not wish to appear behind the times, attach the widest, if we fear to say the loosest or vaguest, meaning of all to the term Attention.

It appears, then, to be highly probable that views of attention and views of the general nature of the educative process are being taught which we honestly believe to be inconsistent. It is in the hope of provoking a discussion that this article is written. Very possibly the supporters of what we believe to be the right view are many. But the opposite side has such a superiority in the number of its books that it will continue to have the strength which comes from being considered orthodox, until the numerical strength of its opponents declares itself. Such a sudden change in orthodoxy occurred some few years ago when Herbartianism was suddenly discovered to be the view of a minority; but neo-Herbartianism never had such a solid support as is afforded by the general consensus of opinion among the psychologists.

To the psychologists, however, it may well have appeared up to the present to be a mere question of words. It is the educationalists, to whom it is a living question on which practical issues depend, whose duty it is to thresh the matter out. If to the psychologists it is merely a question whether to call A attention and B by some other name, or to call B attention and A by some other name, they might quite easily be converted if they found that to educationalists the denotation of the term was so fixed that the attaching to it of a connexion inconsistent with that denotation was a serious cause of mischief.

Let us come at once to the heart of the matter. What we will call the orthodox view, till it be proved otherwise, maintains:

- (i) As a psychological statement of fact that "volitional attention" can only be maintained for a few moments;
- (ii) As an educational norm, arising as a corollary therefrom, that teachers should aim as far as possible in securing "spontaneous" or "apperceptive" attention.

The other view maintains that all attention is purposive; hence, if its "purposive" attention is identical with the orthodox "volitional" attention, the positions are absolutely antagonistic; or, if it is not, a

close analysis of the phenomena which have given rise to the two terms is needed.

In non-technical language the difference between "volitional attention" and "purposive attention" seems to be this—in the case of "volitional attention" the person says to himself "I will attend," in the case of "purpose attention" he says "I will do so-and-so" which involves attention. If I say "I will now sit down and write this article till it is finished," or "as much of this article as I can write at my full speed for an hour," the attention which results is purposive. I am not absolutely clear whether it is "volitional" for the first two minutes and after that becomes something else, or whether it was never "volitional" at all; but I was never conscious of any *effort* to attend at the beginning. If, however, I were for a moment to think of something else and then recall my thoughts by a feeling of effort, that would constitute for the moment "volitional" attention.

This use of terms lays all the stress on the presence or absence of effort, not in the presence or absence of a decision. It is all a question of the feeling tone. It therefore emphasizes the cases where we are fatigued, disturbed, distracted, nervously upset, working at a task we can't do, or in some other way impeded from doing our best work, to the neglect of the times when we are efficient. It can hardly be seriously maintained that a science of mental hygiene should be built on a foundation of pathology, or a science of education on an analysis of cases of inefficiency. First let us look at the smooth, harmonious working of our minds, which we wish to be the rule, and then see the deviations which arise when the machinery is, for some reason or other, thrown out of gear.

It is certainly not the case that a *resolve* can only operate within the space of a minute or so after it is made. It can determine the content of our consciousness hours, days or months afterwards. We are meeting instances of this all our lives; but often unusual cases sharpen conviction where daily experience has blunted its edge. Most of us can resolve to wake up at six the next morning, though we nominally wake up at eight, and do so. Still more striking is the analogy found in hypnotic cases where, if the expression be allowed, we do not make up our own minds, but let someone else make them up for us; the hypnotic patient, if he be told in the trance that he will take off his coat an hour later, though he has then returned to his waking state and forgotten all about the suggestion, nevertheless takes it off.

If, then, I determine to write a paper for two hours, and then go a walk, why do I begin writing? Because I made up my mind to do so. Why do I stop at the end of two hours? Because I made up my mind to do so. Why do I go on through the two hours? Presumably also because I made up my mind to do so. There seems no reason to say that the changes are any more under the control of my will than the continuity. There is no true analogy between my going on working for the fixed time I had set myself and the movement of a body

which, when set in motion, continues to move in the same straight line at the same rate, so that some specific cause has to be assigned in case it stops. At the basis of this unwillingness to recognize the continuous operation of a resolve there is probably something akin to the belief that "a body cannot act where it is not"—a feeling that a conation cannot act *when* it is not. But it is perfectly clear that this feeling has no foundation in fact.

The original conation, then, has been most perfectly successful when it has carried me through the two hours without any recall of wandering thoughts. Let us press the point a little further. Suppose my thoughts do wander and I recall them. What makes me recall them? Not some uncaused cause in the shape of a volition. It is the original conation which is still operative. But, whereas it has in the interval been operating subconsciously, it may now be forced to enter consciousness in order to produce its effect. It may be that the very wandering of my attention, so to speak, "rang it up"; or it may be that my thoughts were distracted by something which was for the moment more powerful than the original conation, but that the power of this distracting stimulus has diminished, and then the original conation which had been tending to operate even when it was overborne became more powerful than the rival force. This is all metaphor, but it is difficult to use any language not metaphorical which conveys the meaning.

"Volitional" attention, then, is only "purposive" attention thwarted in its action and so intermittent in its effects. It is obvious, therefore, why no educationalist wishes his pupils to be obliged often to exercise it. But is it a natural classification of any body of phenomena which sets up as one of its main classes, if not as the most typical class, one of which the chief differentia is that its working is thwarted and intermittent?

We may note a few more points about these sequences of mental states bound together by purposive attention. Recall of wandering thoughts is not the only work which needs a conscious direction by the will. The original act of conation only decides the general path along which our consciousness is to travel. At certain points we reach the end of a particular stage of our work, and we then have to determine, by a fresh act of judgment, along what lines we are to proceed next. But all decisions or changes proceed in conformity with our original purpose. We may say that within a large attention process there are many minor attention processes. Again, there are certain tasks, of a manual or mechanical kind, where full concentration is required only at intervals. At times, indeed, the consciousness of the task may be purely marginal, and the centre of consciousness may be occupied with something else. Are we still to say that such a process is marked by attention at all? Yes; there is still this great mark of the presence of a purpose; as soon as a stage in the process is reached where concentration is needed, it follows automatically. The carpenter



ceases to whistle, and for a few seconds his thoughts are intently concentrated; then, without any special resolve, the whistling begins again and the intensity of thought is released.

We have thus far attempted to analyze the process of purposive attention, and to note the cases where it is not marked by complete continuity in time. It may be defined as "the determination of a sequence of conscious states by an act of conation." It is clearly a phenomenon which appears more completely and more frequently in proportion to a man's maturity, education, and efficiency. It is only embryonic in young children; it is not fully developed in half-educated persons; its absence means that the individual in whom it is absent is less effective. These facts are signs that it is a quality with which, as educators, we are intimately concerned; a quality which it is desirable that our pupils should ultimately possess, which is not present at the beginning of their schooling, and which is present at the end in proportion as our education has been successful.

Is not such a phenomenon, which has more to do than any other with effectiveness, and which plays so large a part in mental life, if that life is accomplishing its *raison d'être*—is it not worthy of a name?

On the other side, is there any advantage in using the term attention in the loose sense which is now common? The vagueness of present usage is evident at once if we think of the various investigations which the experimental psychologists describe as enquiries into attention. A few may be mentioned. Attempts to discover how many spots on a piece of paper can be discriminated during some short exposure in the tachistoscope, how many beats of a metronome may be apprehended without counting, whether a given individual to whom a complex is presented for a short space will notice a little about many parts or much about a few parts, how long an individual takes to accommodate himself to distractions, how much time is saved in a particular case by the performance of two rather mechanical processes simultaneously instead of successively, at what intervals a listener will fail to hear the tick of a watch held at such a distance from his ear as to be only just audible—what common factor is there which is being investigated in these various "enquiries into attention"? Many of these enquiries are not investigations of attention in any conceivable sense in which that term could be used, but into the maxima of a variety of functions, "attention" being only a condition necessary for the attainment of a maximum. In other words, to secure the success of the experiment, we must be sure that the subject has tried his best. This is a condition which equally applies to the success of most psychological experiments; and investigations into mechanical memory might, from this point of view, be equally well described as enquiries into attention. No advantage seems to be gained by the use of the word; the "field" of attention might just as well be called the "field" of clear discrimination; the distribution of attention might equally well be called the distribution

of apprehension; while the terms perception, concentration, &c., cover the rest of the ground.

Let us now turn from the loose actual usage of the term in current psychological writing to what is perhaps the only attempt at accurate definition which could cover so wide a ground, namely Ward's, "the reaction of the mind on its object." This definition, or something like it, seems to be the basis of almost all present usage. It arose from the impossibility of describing psychological states except in terms of subject and object. Someone is thinking about something. Even feelings and conations have some reference. Attention seemed a useful word to apply to this *direction* of consciousness, because consciousness has as a rule a perceptual, conceptual, affective and conative content, and a wide term like attention covered all these processes considered solely from this point of view, as related to an object.

But if all consciousness is related to an object, and attention is only consciousness considered in this relation, then the term consciousness could be substituted for the term attention whenever we do not specify the object to which consciousness is related. But do we ever find psychologists adhering in practice to such a meaning? The "field of attention" does not mean the "field of consciousness," but a certain portion of that field round the focus. Psychologists would as a rule admit theoretically that whatever object was in consciousness was in some measure attended to, and that "inattention is only attention to the wrong thing," but in practice they use the term in such a way as to suggest that attention becomes more truly attention if certain other conditions are fulfilled, and thus the possibility of substituting the word consciousness for the word attention vanishes away. There are many things which acquire importance by increase in their intensity, extensity, or duration; but ordinary psychological usage suggests that there is something more than a lack of importance in small doses of attention in question, in short, that at the back of the psychologists' minds is a belief that consciousness is only attention when it possesses certain definite qualities in a certain measure, and that they would make these qualities the differentia of attention if only they could define the amount of them required. We suspect that they are forced to recognize all consciousness as attention only by the same difficulty that besets the definition of the precise size required to make a hay-rick a hay-rick.

If there is such an underlying belief, then the true current meaning of the term is not to be ascertained from definitions or formal descriptions, but by an inference from current usage as to what these qualities are. Unfortunately such inferences are derived from general impressions, and are difficult to substantiate. There appears, however, to be at least three—intensity, concentration, and continuity. We never feel doubt about a person's being happy because it would be conceivable that he should be happier as we feel doubt about the reality of his attention if we think he could "attend harder," that is expend more nervous

energy over his conscious processes. We invent experiments to find out how many things a person can attend to at once, thereby showing that we hold that attention ceases when consciousness is directed on too many objects at once. To be constantly changing the object of attention is the typical "inattention" of the layman, and the psychologist cannot avoid falling into his usage.

In other words the identification of attention with consciousness breaks down in use. But the ordinary classifications of attention are clearly classifications of consciousness. For it is classified as perceptual and conceptual, which is a classification of the cognitive aspect of consciousness, and as reflex, secondary reflex and volitional, which is a classification of the conative aspect of consciousness.

The classifications reveal prominently a defect which we might expect from Ward's definition, and which we can to a less degree notice in current psychological usage, namely, that attention is regarded as an aspect of a momentary state and not of a sequence of mental states. It is the moments of attention which are perceptual or conceptual, reflex or volitional; for in the course of ten minutes' attention every variety may have been displayed in turn without destroying the unity of the sequence. I may observe an experiment and then sit back with my eyes shut to ponder on its meaning; I may start my work with an effort, continue it through force of habit, and finish it in a state of profound interest. There must be something wrong with any view of attention which lays the stress on its momentary aspects and not on the unity which underlies its continuity. What is in a man's mind now has no significance except as a part of a sequence which includes what went before and what will follow after.

Here, then, we reach the prime consideration which appeals to the educationalist. We think it will appeal to the psychologist, too. The educationalist thinks of consciousness as an *ἐνεργεία* working towards a *τέλος*; and does not trouble about artificially-isolated moments; and the *ἀρετή* which enables that *ἐνεργεία* to attain its *τέλος* is the power of directing the successive states of consciousness along the lines prescribed at the beginning. Of course, the psychologist may tell us that he has nothing to do with values, that for him attention and inattention, efficiency and inefficiency, sanity and lunacy, are equally facts. To do so is to forget that the mind is a part of the man, and that every part has a function as regards its whole. The psychologists may disregard moral values, but they cannot disregard efficiency values.

Another difference of attitude which results from the tendency to think of attention only as it stands at any particular moment is this. We think and write of consciousness in terms of subject and object. If we have in view a sequence of states of consciousness lasting over a considerable time, the term "object" inevitably acquires a very different background from that which envelopes it when we are thinking of a momentary state. The "object" of which we are thinking is still a complex unity, but it is a unity which is obviously made a unity only



by our thought, in a sense which the "object" of a momentary state of consciousness is not so made. The elements in this unity are more likely to be far apart in time and space; we describe the unity as a "topic," a "problem," a "subject," a "question," an "issue," or by other like terms. The "object" of a single momentary state is, on the other hand, much more likely to be a concrete thing, like a dot on a piece of paper, the petal of a flower, or a given quantity of a chemical substance in a test-tube. In the latter case we are much more inclined to lay stress on the determination of our consciousness by the object than on its direction by ourselves. In a particular piece of observation undertaken in the working out of a scientific hypothesis, it is essential to our purpose that we should to some extent deliver our minds up to the object which we are observing, in order to be guided by it in the way of truth, and not in the way of our preconceived opinions. But this is not the whole truth. We deliver ourselves up because of our own purpose and within very definite limitations; the determination of our consciousness by the object is only partial, for the object only, so to speak, answers the question which we ask it. We accept any relevant answer which it may give, but no irrelevant answer.

We have attempted to show that the present usage of the term (1) is vague, (2) forsakes the only definition which is wide enough to sustain it, and (3) leads to a forgetting of certain of its important characteristics. Our own definition, we think the reader will readily admit, is definite; but he may doubt if it corresponds sufficiently closely to the general denotation of the term. It is, therefore, necessary to notice that if it be accepted, the reason why processes of attention are generally marked by intensity, concentration, and continuity of thought becomes at once apparent. A person determines so to direct the sequence of his thoughts as to achieve a certain aim; and usually all these factors are necessary to success. At the same time, however, none of them is necessarily required throughout the process. In manual work we may for certain stretches be doing all that is needed with little mental exertion; in a laboratory we may be simultaneously adding a row of figures and keeping our eye on the boiling of a liquid; in writing a book we may allow ourselves a couple of minutes to light a pipe, and be able to resume our train of thought at the end; but our series of mental states as a whole is marked by attention, that is to say, is determined by and towards our purpose. These three qualities, however, are usual attributes of attention as we understand it, so that we are sufficiently in accord with general belief.

I have devoted most of this article to the purely psychological question. What are the differences which result in our views on education is made clear enough by Professor Welton. To the majority of educational writers attention is a state of receptivity, valuable only in so far as on each separate occasion some particular information or point of view is acquired. To the author of the *Psychology of Education* it is not indeed the only intellectual virtue, but the greatest of all, because,

without it, the others can never be fully exercised. The worker who finds it hard to settle down, whose mind is easily fascinated by irrelevant issues, who is constantly led into bypaths, who dawdles rather than reach points of difficulty, who shirks facing facts, may have many good intellectual qualities, but he is unlikely to be effective. Yet these and many other intellectual vices all have their roots in the lack of this one power; our thoughts do not travel on the lines in which we had determined that they should travel. I readily grant that, the moment one talks about intellectual excellences, one has committed oneself to some kind of disciplinary theory and has to face all kinds of questions of the possibility of training general habits. Granted our theory of attention, and a wide field of discussion is opened as to the manner in which this greatest of intellectual excellences is to be trained. It may well be that there are certain main types of activity for which it needs to be separately acquired—we need to acquire attention in getting an intelligent grasp of the contents of a book, attention in the observational processes of physical science, attention in manual work, attention in ordering one's own ideas on a given subject, and so on. But I should be surprised if directly or indirectly the acquisition of the power to attend in any of these directions was not found in some degree to help attention in each of the others, and if it was not found in a great degree to assist attention in activities which had a close general resemblance to that in which it had been trained. Unless a school curriculum is very narrow, methods of teaching which during most of the hours of work are arousing purpose will have succeeded in arousing it in quite a number of directions, till an attentive set of mind becomes the natural reaction to any situation which is diagnosed as "Something to be done." The more unfamiliar the work, the more recalls of wandering thoughts will no doubt be needed, but the point is that in the case of the man who has acquired this set of mind, the wandering thoughts *will* be recalled, and recalled so promptly that with a little practice they will cease to wander, whereas, in the case of the person who has never been so trained, their wandering will become a wider and wider habit which will gradually infect all his other activities.

The main points which this paper has sought to establish may be summarized as follows:—

- (1) The view of attention which underlies my own definition, and the view which is now generally accepted by psychologists, lead to very serious differences of educational theory and practice.
- (2) The meaning which psychologists attach to the term "attention" as revealed in their usage is so vague as to be incompatible with any definition: their usage does not stick to Ward's definition, and suggests a belief in three differentia, viz., a certain level of intensity, of concentration, and of continuity of consciousness;
- (3) This vagueness has led experimental psychologists to believe that they were investigating some one element in consciousness which

they describe as attention, when in point of fact they have been investigating a number of different elements ;

(4) The importance of that particular attitude of mind which seems to me to lie at the basis of all effective mental work has in consequence been left out of sight ;

(5) My own meaning is capable of clear definition, and this definition corresponds most closely to the popular denotation of the word "attention" ;

(6) The acceptance of this definition in psychological discussions would emphasize the fundamental character of such psychological principles as the continuity of mental life, the unifying power of the mind, the purposive character of its activity, and the importance of the general "set" or "orientation" of consciousness ;

(7) Its acceptance in educational discussions would emphasize the importance of mental activity as opposed to receptivity, and the truth that an intellectual education largely means an increased power to use the mental tools under control of the will, not on lines determined by a number of separate mechanical habits ;

(8) It will, therefore, help to meet a serious danger which arises from the present stress on those parts of psychology which alone are as yet reducible to experimental treatment ; that is, the danger of re-introducing a mischievous form of faculty-psychology, which suggests that mind is made up of a legion of "elements," mainly sensory, or consisting of various kinds of imagery and mechanical memory, each "functioning" separately, and so altogether forgets the mind itself. To call this "losing the wood in the trees" would be a gross misuse of metaphor ; for a wood *is* simply a number of trees, but the mind *is not* simply a number of "elements" or "functions."

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### BOOKS RECEIVED.

**Selections from the Poems of John Keats.** Edited by A. Hamilton Thompson, M.A., F.S.A. (xxxii + 172 pp.) Cambridge University Press. 2/- net.

**Selections from the Poems of Percy Bysshe Shelley.** Edited by A. H. Thompson. (xxxix + 197 pp.) Cambridge Press. 2/- net.

**A Student's Book on Soils and Manures.** By E. J. Russell, D.Sc. (ix + 206 pp.) Cambridge University Press. 3/6 net.

**Nights and Days and other Lay Sermons.** By Helen Wodehouse, D.Phil. (188 pp.) Allen & Unwin. 4/6 net.

**The Family as a Social and Educational Institution.** By W. Goodsell, Ph.D. (xiv. + 588 pp.) Macmillan. 8/6 net.

**Marvels of our Bodily Dwelling.** By Mary Wood-Allen, M.D. (328 pp.) Vir Publishing Co. 5/- net.

**The Dawn of Religion in the Mind of the Child.** By Edith E. R. Mumford, M.A. (xi + 111 pp.) Longmans, Green & Co. 1/5.

**N.B.—The Historical Atlas of Europe (1789-1914),** by J. G. Robertson and J. G. Bartholomew, is published by the Oxford University Press, and not by the Cambridge Press, as stated in our last issue.



## FURTHER DATA TOWARDS THE STUDY OF THE BINET-SIMON SCALE.

BY NINA G. R. TAYLOR, M.A.

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"THE Binet-Simon scale is still in its experimental stages." No one felt this more strongly than Binet himself, who gladly welcomed criticism, and much desired to see the scale used and tested in other lands.

As the scale was graded relatively to the capacity of children in the primary schools of Paris, its authors particularly desired to know how far their conclusions were valid for children of the same class in other countries. The following data pretend to be no more than a modest contribution to the mass of work which must be done before this instrument of mental measurement can be considered to have attained scientific perfection.

The investigation was carried out in a large primary school (Western Road Infants' Junior and Senior Schools) in a working-class quarter of Sheffield. The writer aimed at getting ten children of each age from 5 to 14 years, making 100 children in all. Owing to an error, five boys and eight girls aged 8 were tested, making 103 children in all. Boys and girls in equal numbers were taken for the other years. To prevent any misunderstanding about the exact age required, the experimenter asked the teacher to pick out children whose ages were within three months of the year required. Thus, children of 9 were not more than 9 years 3 months, and not less than 8 years 9 months, on the day of their testing. The teacher was further asked to send children of average ability.

Full records of the experiments have been kept, and the results, as tabulated and summarized, may be seen in Tables A and B. 13 B 3 = a thirteen-year-old boy; 6 G 5 = a six-year-old girl. The last numbers, 3 and 5, refer to the place in the book giving the full record.

The 1911 scale was used, and Miss Johnston's translation and modifications (e.g., for the coins) were adhered to. The experimenter, having first learned to apply the scale under M. Simon's guidance in Paris, strictly adhered to the author's suggestions as to procedure.

The subject was tested for the year below his age first, the experimenter going further back in the case of a weak subject, and going on until the subject failed in three tests of any series above his age. Thus every subject tried at least fifteen tests, and the stronger subjects tried as many as twenty-five. The subject was marked to the highest age at which he passed all five tests, and .2 was allowed for each test beyond this age.

Table I gives a summary of the results, and at once reveals difficulties.

TABLE I.  
Normal

Physical Age.	-3	-2	-1	At Age.	+1	+2	+3	Total Tested.
5			2	6	1	1		10
6				5	5			10
7				2	7	1		10
8		1	4	7	1			13
9			2	6	2			10
10				6	4			10
11			4	2	4			10
12		3	2	5				10
13	1	3	6	0				10
14	3	7	0	0				10
	4	14	20	39	24	2		103

The 1911 scale has no tests assigned to ages 11, 13 or 14. Children of those ages *must* succeed in passing some of the tests assigned to years higher than their own, unless they are to come out *below* their physical age. Further, whilst a child of 6 has thirty possible tests beyond its own age, a child of 11 has only ten, and a child of 13 or 14 only five. Consequently a strict application of the marking brings about a strange distribution of mental ages for the elder children. Two of 12, three of 13, and seven of 14 are "backward," whilst one at 13 and three at 14 have a retardation of three years, and would therefore appear to be fit subjects for a special school.

If the detailed Table II be consulted, it will be seen how very hardly this system of marking bears on certain cases. Compare, for example, 12 B 1 and 12 B 4. Both boys have passed six tests beyond the X series, B 1 having two, and B 4 only one, of the XV series to his credit. Yet the latter scores 12·2 years as his mental age, and the former only 11·2 years, for, while B 4 has passed *all* the tests at 12 and can add his further test to the XII level, B 1 has missed one at 12 and can only begin counting from the X level. Now if, as would seem only fair, B 1 were allowed to make up his XII series with a XV test, both boys would score the same mental age—12·2.

Again compare 14 B 5 and 14 G 5. It will be seen that the girl passes three of the XV series and the boy four—that is, he has only missed scoring a mental age of 15 because he was unable to find three primes. Yet, owing to gaps in his scores lower down the scale, he has

to utilize his later successes to make up, and comes out as 11·2 years, whilst the girl reaches 12·6 years. Between the ages of 12 and 14, there are so many anomalous cases of this kind that an alternative marking (based on the principle of stopping a XII gap with a XV pass and counting from that level) has been tried and the results recorded in brackets in Table B. It will be seen that, though there is now **no** glaring absurdity, the result is a flat level for ages 12, 13 and 14—the new median test ages being 12·2, 12·2 and 12·4. Nine twelve-year-olds are *at* age, but none at the later years, since the children of 13 came out with a retardation of *one* year and the children of 14 with one of *two*.

TABLE II.

Tests.			12 B 1	12 B 4	14 B 5	14 G 5
X	1	...	+	+	—	+
	2	...	+	+	+	+
	3	...	+	+	+	+
	4	...	+	+	+	+
	5	..	+	+	+	+
XII	1	...	+	+	—	+
	2	...	+	+	—	+
	3	...	+	+	+	+
	4	...	—	+	+	+
	5	...	+	+	+	+
XV	1	...	+	+	+	+
	2	...	—	—	—	—
	3	...	—	—	+	+
	4	...	+	—	+	+
	5	...	—	—	+	—
Mental Age ...			11·2	12·2	11·2	12·6
Amended Reading			12·2		12·4	

Some mitigation of these results may be made by *weighting* the tests on the following plan. Five tests for 15 years enable a child of 12 to count three more years. Therefore each fifteen-year-old test should have three times the value of the tests in series, which enable



the subject to add *one* mental year to his stature. Thus we should allow .6 for each fifteen-year-old test and .4 for each twelve-year-old one. Applying this method of marking to the boys of 13, we get their mental ages as 13.2, 13.8, 12.6, 14.4, 12.8, instead of 12.4, 12.6, 12.2, 12.8, 12.2.

Yet a change in the marking is a mere palliative. The real difficulty lies in the fact that just when mental development leaps forward showing a wealth of capacity in various directions, the scale shrinks into itself and refuses to measure! It is easy to understand the difficulty of finding a few simple tests capable of measuring development at a time when development is irregular, uncertain, and complex. As it stands, the scale certainly seems inadequate for the years after 12; some writers regard it as insufficient for ages beyond 10.

Returning to Table I, we see that, if we reject the results for 12, 13 and 14 years as misleading, we get 34 children out of 73 *at* the mental age for their years. And, since it is usual to regard as normal those children whose mental age is within a year of their physical age, we see that 70 out of 73, or over 95%, of our children are diagnosed as normal by the scale.

If we take the whole results, 83 out of 103, or 80.5%, are normal—a higher result than that obtained in Scotland by Miss Rogers and Mr. McIntyre. But it should be observed that their calculations were based on results obtained by using the 1908 scale, on which the 1911 scale was considered an improvement by its authors.

The Sheffield results suggest that, as a whole, the scale is suitable for English children.

If we look at the median test age we see that the tests for 6 and 7 seem to be too easy. The results obtained up to the age of 10 agree fairly closely with those obtained in Scotland. Table III should be compared with a similar table given on p. 272 of the paper in the *British Journal of Psychology*, vol. vii, 3. In Table III, the column M & R gives the series of median test ages obtained with the 1911 scale in Scotland. Yorkshire children, though undoubtedly more reserved than French children, are perhaps less so than their Scotch cousins, and they do not show that "general backwardness in language" which is regarded by the Scotch experimenters as a cause of the "retardation invariably shown by Aberdeen children in all the tests in which speed is an important element."

Thus, while the Scottish investigation suggests that the scale is not well adapted for children over 10, the English results, so far as they go, suggest that the tests are well adapted for the ages 5, 8, 9, 10 and 11. That a satisfactory mental age is obtained by passing tests *beyond* those allotted to the actual age is shown by reference to the large table or the following summary, giving the number of children who pass all the tests for their age.

TABLE III.—Distribution of Mental and Physical Age. 1911 Scale.

Physical Age	3	4	5	6	7	8	9	10	11	12	13	14	15	Number Tested.	Percentage "at age."	Median Test Age.	M. & R. Scotch Median Test Age.
5		2	6	1	1									10	60	5.2	5.4
6				5	5									10	50	7	7.4
7					2	7	1							10	20	8.2	7.9
8				1	4	7	1							13	53.8	8	8.2
9						2	6	2						10	60	9.2	9.1
10								6	4					10	60	10.4	9.9
11								4	2	4				10	20	11.2	10.3
12								2	2	5				10	50	11.6	10.8
13								1	3	6	0			10	0	12.2	11.5
14									3	7	0	0		10	0	12.4	—
		2	6	7	12	16	8	15	14	22	0	0		103			

Age ...	5	6	7	8	9	10	12			
No. of Children passing five tests	0	4	9	2	5	3	3		Total	$\frac{26}{73}$ 28%

The children of 6 benefit greatly by the seven-year tests, whilst the children of 10 are at a disadvantage owing to the absence of tests for 11. In the case of children of 12 and over, the disadvantage due to the absence of tests for 13 and 14 and for over 15 is so great as to make the scale really inapplicable.

### Discussion of particular Tests.

(a) *The Picture Test.* It has been urged that the pictures (see *Journal of Pedagogy*, Vol. I, No. 1, pp. 29 and 30) are unsuitable for English children, and the Scotch investigators have unfortunately used pictures "probably easier to interpret than those of Binet." The present investigator is convinced that this difficulty has been exaggerated. Interpretations come readily from the elder children of 13 and 14 (see Table A), and occasionally from individual children from 5 onwards. Thus 5B2 said of the third picture, "A man looking thro' a window and *he's in prison.*" Of the second, "That man's *poorly* and that isn't." 6G1 said of the latter, "A man and *he's fainting*, and the lady is laying on him—*she's frightened,*" &c. 7B1 said of the 3rd, "There's a man looking out of *the prison window . . .*"

There is another interpretation at 8, two at 9, and four at 10, when the first picture ("it looks as if they were removing") is understood for the first time.

The majority of the children from 6 onwards are able to describe the pictures. One child of 8 and two of 14—a boy and a girl—enumerated simply.

(b) *The Problems.* XV 5. It will be remembered that there are two problems, *both* of which must be solved for the test to be passed. Here the simple marking is very misleading, as the following summary will show:—

Age ...	10	11	12	13	14
Two problems solved by ...	0	1	1	2	1
One problem „ „ ...	3	4	5	7	6

Credit should surely be given for solving half the test! The first problem was found much harder than the second; in fact, when *one* problem only was solved, it was the second—"somebody's dying"—without a single exception. Thus thirty out of fifty children understood the significance of the visits of a doctor, lawyer and priest, although the



lack of uniformity in death-bed customs in this country undoubtedly makes this test harder for English than for French children.

(c) *Definitions.* VI 2 and IX 2. Like Miss Rogers and Mr. McIntyre (henceforward M. & R.), I felt the ambiguity of the criterion "better than use," and the "injustice in 'passing' a very poor descriptive definition while 'failing' a very good functional one at age 9." They have so admirably analyzed the types of definition given that it would be well if this test could be standardized in the light of their valuable suggestions as to its amendment.

### Criticism of the Internal Marking of the Tests.

Many experimenters must have become aware that the simple marking + or - slurs over differences in capacity, which it is the main object of the scale to discriminate. Thus in X 4 and X 3 the same mark - is assigned to the boy who makes no attempt at all and to the boy who succeeds in  $\frac{2}{8}$ . Similarly the boy who easily solves each item  $\frac{5}{8}$  gets no more credit than the one who only just succeeds in  $\frac{3}{8}$ .

In arranging weights, A B C D E, the child who makes no attempt to lift the boxes, the one who makes two or more errors in each arrangement (e.g., B C A E D), and the child who succeeds once and then makes a constant error in the lighter weights (e.g., A B C E D), are all marked in the same way -. Yet, undoubtedly, the values of these different results vary. These and several other tests could be made finer instruments were they internally graded.

Again, the instructions as to the assignment of the + or - seem very arbitrary. In IV 3, VIII 5 and XV 1, *one* success out of three is sufficient. In IX 5, X 1, XII 4 and XII 5, *two* successes out of three are necessary, whilst in XV 2 all *three* rimes must be found. And, finally, as other writers have pointed out, the method of + or - leaves too much room for chance.

### Tests in which Sheffield children displayed precocity or backwardness.

*The 5-year old children* easily passed the tests for 4 years, but found tests 1 (comparing two weights), 3 (repeating ten syllables), and 5 (the divided rectangle) too difficult in the five-year series. If we regard a test as rightly assigned when 70-75% of the children pass it, it will be seen from Table A that V 1 should go up to VII, V 3 to VI, and V 5 to VII. On the other hand V 4 is too easy. As M. and R. suggest, it should go down to the tests for 4 years.

*Of the tests for 6 years*, VI 1 (knowing morning and afternoon) seemed too easy. It should go down to V. VI 5 (Æsthetic judgment) is also too easy, and should go down to the V or even, as M. & R. suggest, to IV.

*Of the series for 7 years*, VII 1 (knowing right and left), VII 2 (description of pictures), and VII 3 (execution of a triple order) can be done by the six-year-olds. The naming of four colours (VII 5) should

go down to V. The counting of money was not too hard for the English children, and there seems no ground for moving this test, as M. and R. would do, to age 9.

*Tests VIII*, 1 and 3 were passed by the majority of children of 7. Five digits—and occasionally six or seven—were remembered by children of 6. M. and R. also find that this test could be passed by Scotch children of 6. With regard to VIII2 (counting backwards from twenty), the results are ambiguous, as eight-tenths of the children at 7, but only six-thirteenths of those at 8, passed this test. VIII4 (the date) gave rise to difficulty.

Of all the tests, those assigned to *age 9* seemed most suitable, the first four being readily passed at 9, and only by a small minority at 8. VIII5 (easy problem questions) should go down to VII.

*In the series for age 10*, the second test (drawing from memory) can be done by children of 9. M. and R. find the first test (arranging weights) too difficult for their subjects, but it seems rightly assigned for Sheffield children.

The definition of abstract terms seems to be the only *test for XII* in which Sheffield children showed backwardness, but those of 13 and 14 could pass this test. XII5 (arranging disordered sentences) can be passed by 90% of the Sheffield children, who seem to do better at this age than their Scotch cousins, since M. and R. would assign both XII4 and XII5 to the adult series.

Since there were no children of 15 in the primary schools, it is difficult to say how far the *Series XV* is suited to that age. But it is evident that XV3 (repeating twenty-six syllables) and XV5 (problems) were found specially difficult by children between 10 and 14. On the other hand, seven digits can be repeated by 80% of the children of 10, and pictures are interpreted by 80% at 13.

A summary of these results, with proposed changing of grading based on the Sheffield results, and that based on M. and R.'s Aberdeen results, is displayed in Table A.

### Correlation between Teachers' Ranking and Scale Results.

An attempt was made to correlate the teachers' judgments as to the ability of their pupils and the results obtained by means of the scale (see Table IV). Unfortunately, as Western Road is a large school, there are a number of classes for pupils of the same age, and so the groups known to the same individual teacher were very small. The difficulty was further aggravated by special circumstances due to war-time conditions. At the top of the school, however, one master was able to rank thirty pupils (numbered 1—30 in Table B). Unhappily, they were the children between the ages of 12 and 14, to whom the scale seems least appropriate. A correlation index of .56 was, nevertheless, obtained. The Probable Error was .087. The other groups are distinguished in Table B by numbers of three digits—the last denoting the ranking;

the first, roughly, the grade; and the second, the teacher, who judged. Thus, 401 and 413 denote pupils in parallel grades, judged by different teachers. Except in four cases the correlation indices were not high; in two cases they were very low (see Table IV). Grade for grade they correspond fairly closely with those obtained in Scotland by M. and R. It should be noted that, except in one case, the groups were too small for a reliable probable error to be obtained.

TABLE IV.

Numbers at foot of Table A.	Grade.	Number Tested.	Correlation Index.	Probable Error.
1—30	A	30	.55	.087
401—406	B	6	.19	—
411—415	B	5	.46	—
451—455	B	5	.76	—
521—525	C	5	.81	—
631—633	D	3	.51	—
641—645	D	5	.75	—
760—769	E	10	.42	—
771—776	E	7	.47	—
781—785	E	6	.52	—
881—885	F	5	.46	—
891—895	F	5	.51	—
901—905	G	5	.86	—
911—915	G	5	.05	—

Though it has long been clear to the present writer that the work of which the above paper is a record cannot help other investigators in the way that she had, at the outset, hoped, yet she is encouraged to offer it as material teaching to corroborate the important conclusions put forward by Mr. Cyril Burt in his able paper, "The Measurement of Intelligence by the Binet Tests."\* She would like, in particular, to recall to the minds of her readers, and, for her part, to endorse the following:—"First, for all exact and scientific purposes, the principle of external gradation, of constructing a scale out of a long list of heterogeneous tests arranged in order of their relative difficulty, will have to be given up." . . . "Secondly, we must discard the principle of measuring intelligence in terms of age." . . . Lastly, "we need not one but several scales, each carried not merely to the age of (15), but extended through puberty and adolescence to the cessation of mental growth."

\* *The Eugenics Review*, April and July, 1914.

SUMMARY OF TESTS PASSED AT GIVEN AGES.

Age.	TESTS.	Whipple Number.	Physical Age of Children.										Proposed Changes in Grading.	
			5	6	7	8	9	10	11	12	13	14	N.T.	M. & R.
IV.	1 Stating sex ...	...	10	10	1									
	2 Naming key, knife, and 1d. ...	...	10											
	3 Repeating 3 digits ...	...	10											
	4 Comparing two lines ...	...	9											
V.	1 Comparing two weights ...	10	3	5									+	VII.
	2 Copying a square ...	11	7	10									+	VI.
	3 Repeating ten syllables ...	2	5	8									+	IV.
	4 Counting four half-pennies ...	13	9	10									+	VII.
	5 The divided rectangle ...	12	5	4									-	V.
VI.	1 Knowing morning and afternoon ...	20	7	10	9	13							-	
	2 Definitions by use ...	17	2	7	9	12								
	3 Copying a diamond ...	24	0	9	10	12								
	4 Counting thirteen half-pennies ...	27	2	6	8	10								
	5 Aesthetic judgment ...	16	8	10	10	13							-	V.
VII.	1 Knowing right and left ...	14		8	10	11	9						-	VI.
	2 Pictures (description) ...	26	6	9	11	10							-	VI.
	3 Execution of triple order ...	18	10	10	13	9							-	IX.
	4 Counting three pennies and three half-pennies ...	30	2	10	11	10							-	IV.
	5 Naming four colours ...	31	10	10	13	10							-	VII.
VIII.	1 Differences in remembered objects ...	34		7	9	11	10						-	VI.
	2 Counting backwards from twenty ...	32	0	8	6	9							-	IX.
	3 Unfinished pictures ...	21	10	7	9	10							-	VI.
	4 The date ...	35	0	6	4	9							-	VI.
	5 Memory for five digits ...	25	10	10	13	10							-	VI.
IX.	1 Giving change ...	37		1	1	9	10							XII.
	2 Definitions superior to use ...	38		2	2	9	10						+	
	3 Naming coins ...	42		4	3	9	8							
	4 Reciting months of the year ...	41		5	4	8	10							
	5 Easy problem questions ...	44		8		10	10						-	VII.
X.	1 Arranging weights ...	40				6	6	8	8	9	8	8	+	XII.
	2 Drawing from memory ...	...				6	10	10	10	10	10	10	-	IX.
	3 Trick phrases ...	45				2	4	7	10	10	10	10	+	XII.
	4 Difficult problems ...	44				3	8	10	9	10	10	9		
	5 Sentence-building ...	46				3		8	7	10	10	9		
XII.	1 Resisting a suggestion ...	...						9	9	7	5	5	-	X.
	2 Sentence-building ...	46						4	6	10	10	9	-	XV.
	3 Sixty words in three minutes ...	...						4	6	10	10	10	+	adult
	4 Definition of abstract terms ...	48						0	3	5	8	9	+	adult
	5 Arranging disordered sentences ...	49						6	6	9	10	7	+	XIII.
XV.	1 Repeating seven digits ...	50						8	9	9	9	8	-	X.
	2 Finding three rimes ...	51						5	4	4	3	7	+	adult
	3 Repeating 26 syllables ...	52						1	0	1	0	2	-	
	4 Pictures (interpretation) ...	26						4	6	4	8	7	-	XIII.
	5 Problems ...	53						0	1	1	2	1	-	XIV.



TABLE B.

Child's Age and Number	Mental Age.	Deviation in Years.	Index to Teacher's Ranking.	Child's Age and Number.	Mental Age.	Deviation in Years.	Index to Teacher's Ranking.	Child's Age and Number.	Mental Age.	Deviation in Years.	Index to Teacher's Ranking.	Child's Age and Number.	Mental Age.	Deviation in Years.	Index to Teacher's Ranking.
5 B 1	5		911	8 B 1	7.6	- 1	766	11 B 1	11.2		453	14 B 1	12	- 2	24
5 B 2	5.8		912	8 B 2	8		769	11 B 2	11.2		452	14 B 2	11	- 3	19
5 B 3	5.2		913	8 B 3	8.2		761	11 B 3	10.4		455	14 B 3	11.2	- 3	21
5 B 4	5.8		915	8 B 4	7.8	- 1	763	11 B 4	10.4	- 1	451	14 B 4	12.4	- 2	4
5 B 5	4.2	- 1	914	8 B 5	9.4	+ 1	760	11 B 5	10.2	+ 1	454	14 B 5	11.2	- 3	29
5 G 1	7.4	+ 2	902	8 G 1	7.2	- 1	773	11 G 1	12.8	+ 1	406	14 G 1	12.6	- 2	18
5 G 2	5.4		904	8 G 2	8		772	11 G 2	12	+ 1	401	14 G 2	12	- 2	2
5 G 3	6.6	+ 1	901	8 G 3	7	- 1	774	11 G 3	10.2	+ 1	405	14 G 3	12.4	- 2	3
5 G 4	5.6		903	8 G 4	8.4		782	11 G 4	12	+ 1	402	14 G 4	12.4	- 2	6
5 G 5	4.6	- 1	905	8 G 5	8.2		785	11 G 5	10.8	+ 1	26	14 G 5	12.6	- 2	1
6 B 1	7	+ 1	891	8 G 6	6.2	- 2	776	12 B 1	11.2	- 1	23				
6 B 2	7.4	+ 1	893	8 G 7	8		784	12 B 2	11.2	- 1	30	Alternative Ranking			
6 B 3	6.4		894	8 G 8	8		783	12 B 3	10.8	- 2	12	12 B 1 (12.2)			23
6 B 4	7.2	+ 1	892	9 B 1	8.8	- 1	645	12 B 4	12.2		11	12 B 2 (12.2)			
6 B 5	6.4		895	9 B 2	9.6		643	12 B 5	12.6	- 2	22	12 B 3 (12)			30
6 G 1	7	+ 1	881	9 B 3	9.2		644	12 G 1	10.6		27	12 G 3 (12)			28
6 G 2	6.8		883	9 B 4	9.6		642	12 G 2	12.2	- 2	28				
6 G 3	6.8		882	9 B 5	9		641	12 G 3	10.8	- 2	25	13 B 5 (12.2)	- 1	- 1	10
6 G 4	7.4	+ 1	884	9 G 1	9.2		633	12 G 4	12		20	13 G 1 (12)	- 1	- 1	15
6 G 5	6.6		885	9 G 2	10.2	+ 1	632	12 G 5	12.6	+ 1	9	13 G 2 (12)	- 1	- 1	14
7 B 1	8	+ 1	764	9 G 3	10	- 1	631	13 B 1	12.4	- 1	5	13 G 5 (12.2)	- 1	- 1	13
7 B 2	8.2	+ 1	765	9 G 4	8.8		525	13 B 2	12.6	- 1	8				
7 B 3	7		767	9 G 5	9.2		523	13 B 3	12.2	- 1	7	14 B 2 (12.2)	- 2	- 2	19
7 B 4	8.2	+ 1	762	10 B 1	11	+ 1	411	13 B 4	12.8	- 1	10	14 B 3 (12.2)	- 2	- 2	21
7 B 5	7.8		768	10 B 2	11.2	+ 1	413	13 B 5	11.2	- 2	15	14 B 5 (12.4)	- 2	- 2	29
7 G 1	8.4	+ 1	781	10 B 3	10.4		412	13 G 1	10.8	- 3	14				
7 G 2	8.8	+ 1	771	10 B 4	10.2		414	13 G 2	11	- 2	17				
7 G 3	9	+ 2	775	10 B 5	10.4		415	13 G 3	12.4	- 1	16				
7 G 4	8.2	+ 1	782	10 G 1	10.4		401	13 G 4	12.2	- 1	13				
7 G 5	8.8	+ 1	771	10 G 2	10.2		524	13 G 5	11.2	- 2					
				10 G 3	11.2	+ 1	522								
				10 G 4	11.2	+ 1	403								
				10 G 5	10.4		521								

## THE STUDY OF EDUCATION IN RUSSIA. III.

BY PROFESSOR ALEXANDER NETSCHAJEFF, PH.D.

IN the investigation of the stability of attention and the fatigue of children at different ages, we have employed various types of test, but finally we came to regard the reproduction of as many as possible of 12 two-figure numbers as the most useful and practical. The numbers were read in a series with an interval of 5 seconds between each. By requiring the children to listen to and reproduce such series at different times of the day, on different days of the week, and at different periods of the school year, and by evaluating the results from the standpoint of the number and order of correct reproductions, we are satisfied that the gradual strengthening of stability of attention with increasing age is sharply broken at the beginning of adolescence. Further, we find that fatiguability is markedly increased at this period. It is interesting, besides, to note that the simultaneous investigation into the fatiguability of children in schools of the same social type showed that the fatiguability of this period is considerably less in mixed schools. Presumably, the difference in the age at which adolescence begins in boys and girls is responsible for the fact that in mixed schools a general diminution in the working capacity of particular sections of the school is never noticed. The greater working power of the one part of the section infuses vigour into the work of the weaker part.

As the outcome of different experiments, designed to investigate the suggestibility of children of different ages, we have shown that the degree of suggestibility is very much changed in accordance with the character of the suggestion: the more uninteresting the suggestion, the more readily does a child yield to it. Thus, if I say to a class: "Write down any number you like, eight for example," a large proportion will be influenced—some directly (they write 8), some indirectly (they write 9, or 18, or 28). If, on the other hand, the suggestion took a more interesting form, and I say to the class: "Write a few sentences—choose any subject you care about—music, for example," then the number affected would be less. This is true of all ages. It is specially marked amongst the older pupils (boys 15—18), at the time, that is to say, when personal judgment is rapidly developing, and it is least marked at the very beginning of adolescence. At this transitional period children show a disposition to follow a given suggestion directly; later on the indirect form of yielding prevails. This is in agreement with our common pedagogical observations. Every teacher knows that children of this age yield easily to the influence of example and hint, whilst, in comparison with other ages, they obey direct commands with an ill grace.

Amongst problems concerning the hygiene of intellectual work in addition to those mentioned above, there have arisen further enquiries concerning (1) the relationship of sleep and exercise to the intensity of

mental work; (2) the type of work characteristic of different pupils; (3) the influence of change on the quantity of output; and (4) the relative fatigue-producing effects of different forms of school work.

As space will not permit my giving a detailed account of the methods employed in this enquiry, I shall only point out a fundamental characteristic of our procedure. In adapting the different methods of experimental psychology to the investigation of the hygiene of mental activity in school children, as, indeed, in all our school investigations, we endeavoured always to follow one general rule, viz., that every method used should be carefully worked over and tested beforehand in the laboratory, and every doubt which arose as to the interpretation of the results of the school experiments should be the subject of further laboratory enquiry. It follows that, in our view, every psychological investigation of school children must start in a scientific laboratory and must return there.

As to the results obtained in this particular line of enquiry (the hygiene of intellectual work), I may mention the following:—

Analysis of the quantity and quality of the intellectual work accomplished by the children (using the Kraepelin Number Method) at different times of the school day, brought out effectively the different types of working capacity, caused by the significant predominance of fatigue effects over practice effects, and *vice versa*. The great majority of those whom we examined showed, from the beginning of the school day, a gradual increase of fatigue. In some cases (about 15%) the opposite phenomenon was noticed—the influence of practice overcame that of fatigue, and output steadily improved.

In comparing the results of these experiments obtained in the course of a single school day, with changes in the average successes of the pupils in all subjects during the first and second quarters of the year, a distinct analogy between the two sets of figures came out. This analogy enabled us to give a favourable prognosis in those cases in which a boy showed, at the beginning of the year or at a change of school, unsatisfactory progress, if at the same time, he showed in the experiments which we carried out in the course of certain days, a growing predominance of practice effects over fatigue effects.

In the laboratory investigation of the problem of the significance of change in the quality of intellectual work, and what it was that caused the rise and fall, we found the significant fact that in much of the work of the particular individuals the tendency for practice to overcome fatigue was most marked. Persons in whose work fatigue effects steadily overcome practice effects, show to advantage when the character of the work given to them is changed, even if the new work is more laborious and less psychologically favourable to them. Whereas, for persons who show a gradual lowering in the quality of their work, a fresh task, even if it is easier, shows no improvement, the harassing influence of the earlier work continues in the new. And,

inasmuch as the majority of children show, in the course of the day, the gradual predominance of fatigue processes over practice effects, then we may conclude at once that there should be more frequent change from one type of work to another.

The problem of the *kind* of fatigue produced by different types of school activity is of great importance from the point of view of the school time-table. In this investigation we tested the working capacity of pupils before and after different types of school occupation, employing methods suited to the examination of different activities of the human organism (*e.g.*, tests of lung capacity, of pulse conditions, of rapidity of movement, of muscular strength, of memory for words, and so on). In this way we showed how different types of work affected these processes in different degrees, and thus we succeeded in arranging occupations into opposite groups, opposed from the standpoint of the kind of the quality of fatigue produced by them. We found, for example, that for work of a philological character, the most opposed in this respect was work in the carpenter's shop, and change from one to the other can be regarded as an advantageous combination from the standpoint of the hygiene of mental activity.

Of the general problems of Didactics, which arose in connexion with our researches, I can only mention one—the relation between different types of memory to performance in various school subjects.

Visual, auditory and motor memory, which have particular significance for the process of instruction, show unequal development in individual pupils, in accordance with which we find they develop habitual methods of study. For example, pupils who have marked visual memory are inclined to learn their lessons silently from their books; those of motor type say them aloud, and so on.

This development of different types of memory is not in itself equally favourable to progress in different sciences. Thus, pupils with highly-developed visual and motor (alongside of weak auditory) memories are most facile in mastering geography and drawing, whereas foreign languages present great difficulties.

This apparent dependence between individual memory capacity and success in different subjects suggests two problems:—

- (1) To what extent is the teacher in giving his lessons bound to take into account these individual variations in memory capacity?
- (2) How far is it possible to strengthen those forms of memory in which some pupils are weak?

For the elucidation of both these problems, our laboratory has been engaged in a series of experiments extending over several years. As is well known from the many researches of Prof. Müller, of Gottingen, and confirmed in other laboratories, the expediency of distributing the repetition of experiments in such an enquiry over very long periods of time, and of examining the material derived from them as a whole, and not in parts, has been established.



Starting from this position, we arranged for people of different memory type to work at prose selections and series of nonsense syllables, in such a way that, at different sittings, they changed their mode of attack, corresponding to their strongest and weakest memory. Thus, when a person had used his strongest memory (*e.g.*, when a marked audile was learning something or other by ear), then a method of learning was arranged for him which was psychically disadvantageous, and *vice versa*. In this way we desired to find out what factor in the particular case showed greatest strength—was it the individual peculiarities of the memory, or some more general conditions of learning within the limits laid down by the general laws of attention?

The results of the enquiry were decisive. Skill in learning by heart, within the limits of the laws of attention, is beyond the influence of individual peculiarities. Thus, instead of worrying with these differences, teachers should make a careful study of the laws governing attention.

In the elucidation of the problem of the possibility of strengthening the less developed types of memory, we were drawn to a research on the mutual relationship of different types of memory in one and the same person. In the course of many experiments (lengthy ones in the laboratory with adults, short ones in the school with children) we were persuaded that mastering any material given in the form of definite sensory presentations can be made easier or more difficult if the person concerned indirectly receives some stimulus or other from another sensory source. For example, if a person has to learn a series of printed syllables, and at the same time it is arranged for him to hear the tinkling of glass, his work is more efficient every time, whereas in other cases efficiency may be lowered. At the same time, we found that if, for a given person, an indirect excitation of one kind (*e.g.*, auditory) increased the memory efficiency of another kind (*e.g.*, visual), then in the opposite form of experiment (*e.g.*, when auditory memorizing was accompanied by visual excitation), then not an increasing but a lowering of efficiency was brought about. It follows, therefore, that whether memory is or is not working at its highest efficiency depends on the favourable, or unfavourable, character of the indirect stimuli.

It is interesting, also, to note that the exciting influence of indirect stimuli was always observed on those occasions when they conformed most closely to the memory type of the individual himself. To put it otherwise, it was clear that the excitation of centres which correspond to the activities of the special type of memory of the particular person can reflect favourably on the work being done by the weaker sides of his memory, even though the relation is purely mechanical, and quite devoid of logical connexion. This showed us how important it is for the practical solution of the problem of the training of memory to take into account the individual interests of the pupils in which, as is well known, the activity of the strongest side of memory finds expression.

Of other general problems of didactics which have been the object of investigation in our laboratories, I may mention that of visual observation. We approached this problem from two directions—trying in the first to investigate the wealth of *real* impressions in our pupils, and in the second to investigate the influence on the minds of the children of the various methods employed in “observation” lessons.

In the first enquiry, the pedagogical importance of school gardens and school excursions was brought out most clearly (as it had been in other similar enquiries) as providing material for the intellectual life of the pupils, and as arousing the activity of processes of judgment. Amongst the experiments directed to the investigation of the psychological significance of actual perception in teaching “through the eyes,” I may mention those (1) in which things of different sorts were shown to the children, after which they were required to write down any question suggested to them by the things they saw, and (2) in which only the names of objects were given, and once again questions of the same nature were invited. From this it was noticed that the visual perception of real objects tends always to the setting up of analytical judgments, whereas, on the other hand, the names of objects not present at the moment tends preferentially to set up judgments of a synthetic character. Clearly, in the process of learning, each type of stimulus must have a place.

There are certain other teaching problems which are closely related to the general question of visual impressions, e.g., that of the so-called natural method of learning foreign languages. In Russia this problem for the last fifteen years has been very acute, in connexion with the question of admitting to the elementary schools instruction, not only in the ruling language (Russian), but also in the language of the people of the particular locality. Our method of investigation was as follows: We arranged with certain adults to commit to memory a series of nonsense syllables (after the method of Ebbinghaus), giving to them arbitrary meanings. In this way we employed three forms of learning corresponding to the three fundamental methods of teaching foreign languages. (1) The meaningless words were given before the significant one arbitrarily attached to it. (2) The meaningless words were given after the associated significant one; and (3) a meaningless word was given in association with the picture of an object. After learning a series of meaningless words by one or other of these methods, the subject of the experiment was tested (with an arrangement for measuring the rapidity of the answer) by all three methods. For example, if he had learned his series in connexion with pictures, he was required (1) as he looked at the picture of the object, to pronounce the word he had learned in connexion with it, (2) as he read the real name of an object the picture of which had been associated with a nonsense word, to reproduce that word, and (3) as he read the nonsense word, to give the name of the pictured object with which it was associated.

Results showed—(1) that reproduction takes place most easily in that form in which the actual learning proceeded, so that if we wish to obtain varied results in the learning of foreign languages, then our methods of teaching must be varied; and (2) that it is disadvantageous, especially in the first stages of learning a new language, to ignore completely the pupil's mother tongue.

There is no doubt that, in the investigation of psycho-pedagogical problems such as those given already, we should attach great importance to the day-to-day judgments of teachers upon their children. But if it is to be possible to make confident use of such pronouncements, it is necessary to look into the degree of objective certainty which they possess, and in this connexion to clear up possible sources of pedagogical illusion. In speaking of their pupils, teachers sometimes class them as "attentive" or "inattentive," "getting on" or "not getting on," "interested" or "uninterested." What do these attestations mean? On what sort of primary impressions are they commonly founded? Obviously, the clearing up of a question of this kind presents great difficulties of its own. It requires above everything two conditions—(1) that the teachers delivering judgment on their pupils should have an understanding acquaintance with child psychology, and (2) that the pupils concerned should, independently of their teachers, be put through a psychological examination, the results of which it would be possible to subject to statistical correction.

For the creation of conditions of this kind, essential to the successful investigation of similar complex problems of pedagogical psychology, I organized a special school in connexion with the Petrograd Society of Experimental Pedagogy. The whole teaching personnel was made up of people who had received a similar and adequate psychological training—they had been pupils of mine in the Pedagogical Academy. At the same time, a psychological laboratory was organized in the school where pupils, and, in the course of time, teachers, are put under systematic observation.

This experimental school now serves as a centre for these psycho-pedagogical researches. In this school we try, as far as possible, to bring into life those methods of education and instruction which seem to us at the moment the most perfect, but at the same time we endeavour so to conduct the matter that we can register accurately both our successes and our failures. We desire that our pedagogical experience shall be for all time instructive to others, and finally that by the analysis of that experience it shall be possible, not only to say that a certain method of education was or was not successful in our hands, but also to make clear why it succeeded or why it failed.

In comparing the results of the psychological investigation of pupils marked by the teacher of our school as "inattentive" with those obtained by a similar examination of pupils classed as "attentive," we noticed that, although in general the teachers' classification corresponds



with that of the laboratory, yet in the inattentive groups the teachers sometimes go wrong with a pupil who has highly developed powers of attention, and at the same time a very active motor memory. The great number of involuntary movements in a boy of the motor memory type gives rise to an impression of heedlessness in the teacher's mind.

In the determination of the progress of a pupil, as far as our observations go, the greatest significance is attached to rapidity of reaction (to auditory stimuli in particular) and to verbal memory. Thus, children of the visual type, who as a rule react more slowly, sometimes produce an impression of being less successful.

According to our observations, teachers are especially liable to illusion in settling whether or not a pupil is interested in a particular subject. In most cases they are prone to call those pupils "interested" who show less fatiguability, high rapidity of reaction, and strong mechanical memory, in contrast to slight inner activity.

Besides such general impressions of personality as are offered by the words "attentive," "progressing," "interested," a teacher has constantly, from his school experience, to furnish even more detailed psychological judgments about his pupils, for which purpose he naturally makes use of what he has seen of the several sides of the pupil's activity. Both for the investigation of the problems of pedagogical psychology and for practical purposes, it is very important to establish for these cases what significance, in the sense of material for the psychological characterization of pupils, is to be attached to such judgments.

As characteristic of work in this direction, I will mention a series of observations made in comparing the results of reading aloud to pupils with certain parallel laboratory investigations of their mental characteristics. We read to various pupils four selections, containing different kinds of subject matter—one was a mere relation of facts, another was lyrical in character, the third was a piece of imaginative writing, and the fourth a scientific description—after which the pupils were required to reproduce as far as possible the exact words of the original selection, and to ask any questions suggested to them by the piece. Comparing the attitude of the children to this reproduction with the results of laboratory investigation into the various mental processes of the same children, we were able to reach a juster estimate of the trustworthiness of a teacher's observations on the attitude of pupils to books of different subject matter.

The idea of the scientific investigation of the different moments of a lesson, conceived as material for building up the mental characteristics of pupils during a course of years, was originally suggested by the work of Professor Lazursky, who is now carrying on in the schools a carefully-planned investigation with the object of finding out what psychological material lessons in drawing, nature study, handwork, mother tongue mathematics, and so on can furnish.



In this way, whilst gradually working out problems of pedagogical psychology, we are brought up against problems of characterology. In this connexion, alongside the laborious researches of Professor Lazursky, a very noteworthy place in Russia is taken by the investigations of Professor Rosollimo, of Moscow, who has specially worked on abnormal children. Professor Rosollimo has in recent years published his method for the experimental investigations of personality. It consists in requiring the subject to solve series of problems (ten in each group), each drawn up in reference to one or other activity of the mind (attention, memory, suggestibility, and the like). By comparing the numbers of accurate solutions to these problems in each group, the enquirer estimates the relative development of the given subject in respect of memory, attention, imagination, &c.\* These efforts to create a more or less organized method for the investigation of the personality or the intellect of children conform to those general tendencies which at the moment are noticeable in psychology generally—not only in Russia. Everybody knows the work of Binet, de Sanctis, Weygandt, and Pizzoli, who find their disciples amongst us in Russia.

The problem of adapting experiment to the study of the intellect as a whole has, during the last few years, been undertaken in its turn in my laboratory. The results of three years preliminary experiments are now ready for the printer, and I shall confine myself at the moment to giving an outline of the most general features of this new method. Its fundamental idea is that different sides of the intellect should be investigated by the use of one or other material, and should be so organized that a process of gradually-increasing complexity is set up in the mind of the subject. The different moments of this process are recorded, and the correlation between these results are calculated (using the Spearman method), in the hope of bringing them under a small number of typical conceptions (memory, active attention, real associations, verbal associations, illusions). On its external side the enquiry is conducted in this way. The subject is shown (with the help of the tachistoscope) five separately-given objects relating to different sides of life (*e.g.*, a purse, a picture, a cup, a flower, a lamp). Then, looking at each of the objects, he has to point out resemblances (in colour, form, name, and feeling) to other objects known to him. Next, he is required to describe them in detail and from memory. Immediately after this, the experimenter pronounces the names of the objects, and the subject must quickly say the first word which comes forward in his mind associated with the object named. Finally, the subject is presented, one after the other, with five different combinations of these same objects, and he is invited to make up phrases which the group suggests to him. He is then asked to reproduce exactly the thoughts thus suggested, without changing the words. He is not told beforehand of this last requirement.

\* An outline of Professor Rosollimo's work will be found in Vol. I, No. 3, of this Journal (March, 1912).

I must apologize for taxing the attention of my readers with this scrappy account of our work. Space would not permit me to give a detailed description of the methods which we are using in Russia for the investigation of Educational problems. I have, therefore, only tried to give some general idea of our plans in that direction.

N.B.—Preceding parts of this article will be found in the March and June numbers for 1915.

The article has been translated from a Russian MS., and has not received any correction at the hands of the author. The Editor is alone responsible for errors that may have crept in.

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## PUNISHMENT: THE ADJUSTMENT OF A DISTURBED EQUILIBRIUM.

By ALBERT A. COCK.

(Continued.)

Let us, then, examine the problem as it appears in the school commonwealth.

### A.

As at birth the infant enters upon an already existing and established society, so the child upon his initiation into school life enters into an established community. As such he immediately comes under government. It is matter of regret that the distinction between government and discipline has not yet been recognized by practising teachers, although it has been current in theory ever since Herbart's day.

The child, then, comes in school life under a system of government. It was there before he came and it will remain after he has gone. What is its immediate aim? It aims at securing his conformity to exterior rule. It is true that the system of school government is constructed by the staff and educational authorities in general, upon the basis of an ultimate theory of education which is ethical. It aims at training character. To the child, however, this is, in the first instance, all hid from him. What he perceives is that there is an exterior rule, exterior rulers. The teacher is at once rulemaker, administrator and judge. The ultimate sources of authority, the ultimate sanctions of rule, are not apparent to the child. The outstanding fact is that an exterior rule exists, it is the very condition of his being there, and punishment is the inevitable consequence of failure to obey, a perpetual *memento parere*. Habits are being formed and a habitude of mind is being fostered. If the school governance is wisely conceived and wisely administered, the habitude of mind will induce respect for law, and the habits formed will not require to be overthrown in after life but only deepened by true moral conviction.

But government is only a means to an end. That end is not only the immediate one we have been discussing. It also aims at an interior assent to principle and law. This is discipline. Discipline is a much finer and subtler art than government. In it the teacher has not only to appear as maker and administrator of rule, but further, as expounder, exemplar, and embodiment of principle. With the child's development must come a growing recognition that exterior rule is based upon interior principle and assent. He must become aware of his own moral autonomy, and the teacher as disciplinarian has the infinitely difficult task of helping the boy to find in a just rule the realization of his own inner autonomy and spiritual freedom. Such a transition is necessarily slow. The passage between mere conformity to external rule and inner assent to and recognition of its *a priori* principle is gradual, almost imperceptible. It cannot be assigned to any one year, although it becomes particularly obvious during puberty and adolescence.

There is yet another difference between government and discipline which is of importance in the after-life of the child and in the general theory of Punishment. Government is collective, while discipline is individual. The one aims at the corporate life, the other at the life of inner self-government. But the one grows side by side with the other, and in a measure out of the other. Collective government and individual discipline together imply the development of personality amid other personalities. The one is more prominent at the beginning of school life, the other at the end, *but*—and this is of great importance—government does not disappear with the growth of discipline. Had Bentham and Mill observed this feature in the school commonwealth they would have seen that liberty (discipline) does not mean absence of restraint, that law is not necessarily the negation of individuality, and that government is not a choice of evils but an inseparable and most natural factor of human experience and moral growth from the nursery to manhood. Discipline is a revelation of government on its inner side. It is not the abandonment of rule but the acceptance of rule as inner law and sanction.

### B.

Let us now consider personality at the stage of government in school. There are three attitudes to be examined—that of the teacher towards the class, that of the class towards the teacher, and that of the pupils towards themselves and each other. These can best be considered on the supposition that we have a new class and a new teacher.

(i) In the first instance, the master has to acquire the "feel" of the class. He confronts both a series and a sum. He faces a series of seething personalities, each with undiscovered potentialities for disturbance as well as for co-operation. He also faces a corporate body which, fortunately for him, is inclined to act as one, and inclined to submit to rule. But if the teacher cannot rule, someone else can and will, and so in such cases the class breaks up into a number of smaller corporations, each obeying some masterful ringleader. This

means, therefore, that the teacher has to ascertain by intuition, experience, and discernment the index of the class and the index of each individual. He has to make them singly and collectively aware that he has an individuality greater *in actu* than any of theirs *in potentia*. This is what we mean when we say that a man *holds* his class or audience.

(ii) Reciprocally, the pupils acquire a "feel" concerning the master. It will not be exactly the same in all, but it will have a common minimum basis, and if the teacher be a "success" that basis will be one of respect. This respect will frequently be respect for a material property that he possesses, viz., of administering law, but it may be respect for a spiritual property, viz., that of embodying and expressing law. This will depend partly upon the spirituality of the master and partly upon the insight of the class. Some men cannot rule any class save with the adjunct of force; some classes cannot be ruled by anything, at first, except that adjunct.

(iii) The pupils also size and measure their own personalities. Coteries, friendships, and leagues are formed, and these play their part as well in instruction as in recreation. Emulation operates in both fields. Moreover, a little leaven leaveneth the whole lump. One rogue will scourge the most docile class: one straight lad will shame the most corrupt.

We see, therefore, that even in the stage of obedience to exterior rule personality counts and grows. Every experience of punishment accordingly brings the personality of the teacher, that of the offender, and the "general will" of the whole society into sharp conflict, contact, shock. Every such experience arises out of an equilibrium which, disturbed by one, affects all and the whole, and punishment is experienced as the adjustment thereof by a master who is himself a member and representative of that whole. Thus, from the earliest, inner and outer relationships are combined. The degree of good government may be regarded as a measure of the teacher's personality, and as an index of the normal character of the class as a corporate whole.

### C.

We have said that the transition from government to discipline is slow and imperceptible. That there is a difference and a transition is matter of experience. It is implied in the saying, "It is an awkward age." The awkward age is frequently that of puberty, but not always. It is, rather, any age at which the individual will becomes highly conscious of itself, any age at which the individual intellect, prompted by desire and will, challenges exterior rule. The teacher and the rule are now put upon trial. All things are put to question. The master has to become the embodiment of spiritual principles dimly dawning within the boy himself. We have here the beginnings of the conflict between Authority and Freedom. This conflict arises not only in the boy's attitude towards the rules of school government, but



also in a new and critical attitude towards instruction and knowledge. Curricula have to be modified at this stage so as to permit of a larger opportunity for individual self-expression. Method follows suit, so that in the last two or three years of a boy's school career the growing assertion of his individuality dominates organization, curriculum, method, and control.

The result, desired, of course, is the vindication of individuality, through its assent to the life corporate. Consciousness of self-independence must not exclude the recognition that we are members of one body. Recognition of individual rights must go hand in hand with recognition of social obligations. Now this result is only attained by struggle. The earlier docility to exterior rule breaks down. Awkward cases occur. Mediatory discipline becomes necessary.

#### IV.

Mediatory discipline, strictly speaking, is a continuous process. Day by day, as the personalities under his charge grow in wisdom, years, and stature, the teacher also grows into a relationship with them which is more and more individual and spiritual. The numberless little incidents of friction that occur become occasions when the friction-maker is more and more recognized as a disturber of the general peace, while the teacher is seen to be at once the principal sufferer and the principal restorer of the peace. Verily he has the cure of souls. Such mediatory discipline can, however, be more closely examined in connexion with "awkward" or critical cases. These are chiefly cases of individual revolt against statutory rule, and these will be considered first; but there are also cases (for "it must needs be that offences will come") which are in a class apart, and require separate consideration, viz., offences of impurity.

#### A.

What do critical cases of revolt involve? They include three factors:—(i) The restatement of the code of government. (ii) The required consent is withheld by the rebel. His consent must now be based upon an inner assent. This has to be obtained. (iii) That consent was formerly exacted by the master as rule-maker, administrator, and judge. But now it is necessary to make the pupil recognize that at bottom he is, with the whole society, rule-maker himself; the master is but deputy appointed by the law, and while he must be the final arbiter and judge, the rebel also has to be brought to accuse and judge himself.

Consequently, certain factors which have only been implicit in the earlier stages of government now become explicit. They become explicit, not by harrangue or preachment, but in virtue of the fuller stature into which the rebel will has grown. (a) The case produces wretchedness or suffering in the master, the class as a whole, and in the offender. The disturbance of the normal equilibrium is very manifest. Things have gone awry.

Now, this wretchedness or suffering affects the master and the rebel more particularly. It certainly affects the class society as a whole, for the "virtue" of the master is being recalled, as it were, to minister to the need in hand. Moreover, the class is aware that the customary service of obedience and work is interrupted. It no longer has the co-operation of the rebel. While he was obedient his individuality was tributary, merged, though most truly realized in that of the body politic. But now a hostile will appears, and all perceive it. Nevertheless, since the health of the body politic is chiefly guarded by the master, it is in him that the disturbance becomes more conscious pain. And in the offender it is not less so, for he stands an isolated foe. The very individuality which sought in revolt an apparent reality of self-expression finds in actuality that the isolated self is not exalted but abased. The triumph of being conspicuous is but temporary: the loneliness is wretched. This is itself the beginning of retribution and the promise of amendment. Of course, the offender's pain and wretchedness will be of a different order if he has any sense of an outraged righteousness in his cause. That must be examined on its merits by the master, but for our theory of mediatory discipline what is relevant is the case of rebel will unjustified.

Critical cases thus make manifest at this stage the pain that is incident to any disturbance of the moral equilibrium. Offender and master suffer most, but the corporate life of the class suffers also. (b) Now, the direct conflict will never be brought to a head at this stage without warning. That is to say, even before the crisis there will have been an appeal to the "better nature" of the incipient hostile will. The offence has come, however, and the crisis has occurred. What ensues? We suggest that the next factor that becomes apparent is pity. We pity the true personality outraged by the offence, and thereby estranged from the corporate life and from the teacher. Moreover, we pity the class as a corporate body suffering from this hostile force; and with that pity is mingled grief for the spectacle of moral law defied and violated. Reverence has been shocked. There is thus in the teacher in these cases a complex, emotional, and intellectual state in which reverence for justice and law, grief at its hurt, and pity for the suffering offender and class are mingled. These factors need not all be acutely realized at the time, but they are there, to constitute the teacher's experience of mediatory discipline.

(c) *Ex hypo.*, the rebel has challenged the justice and authority of the moral law as represented in the government which he has offended. Hence, a mere forced conformity will not avail. Punishment must prove more profound. How can it do so? It does so through the suffering already engendered by his conspicuous isolation. The isolation and the wretchedness thus produced enable him to divine a similar wretchedness in the master and even in the class. He is uneasy about both. The stated penalty may be exacted, but still something is wrong. He is passing from the stage where in effect he

says, "It serves me right," to the stage where he says, "It wasn't playing the game"; where he recognizes that the "game" requires him as a player and not as a defaulter or a cheat; that the "game" cannot be played without rules which are inherent in its own nature, and that it cannot be played in the school society without a captain of the team.

### B.

The transition to this stage is materially affected by the teacher. His state of pain overlaps, as it were, that of the culprit. His efforts are directed towards deepening the latent sense of "sin." He must mediate between the law which he represents and the offender with whom he is in communion, by pity. He must also mediate between the rebel will and the crushed "better self," which, though in abeyance, still orientates towards its true home—moral autonomy. He must, further, mediate between the outraged body corporate and the individual offender. True, the doer must suffer. In most cases he suffers the just penalty of which he was forewarned; but he suffers in another respect, as we have seen—in isolation and in divination of the teacher's suffering. In this respect he finds he is not alone: there is someone suffering with him and because of him. The offender, therefore, becomes slowly conscious of this mediatory suffering, this pity. He gradually realizes that it is founded upon reverence for moral law—which he has outraged—and that to him pity, as grounded, is made manifest as love. In proportion as this is fully realized, new co-operation follows, first with the mediator, then with the whole class.

It is this which we would add to Hegel's state of Retribution and Amendment. The whole situation is a complex one. It is an adjustment between the individual and society, especially as represented by another individual, and it is a process which in itself involves mediation and atoning, vicarious suffering. Though the forms of external punishment may change, though the offender will see that these are not invariable, he will also recognize that by some form thereof he is making public homage to the moral law under which he has once more been brought into accord. The process described will further reveal that not only does the inevitability of some form of punishment testify to the moral law, but that his acceptance of it testifies to the integrity of his own personality. His right to be punished is his right to be a true person, a person of sworn fealty to law.

But just because punishment and amendment do not affect the subject alone, there is a further consequence. The *status quo ante* can never be restored. It is a new and enriched self which is restored, a healed but scarred society which receives him. This is forgiveness, recall from exile. The exile is at bottom self-imposed, the inevitable and necessary reparation of offence. But the recall from exile is effected by the teacher and the class as a whole. This is forgiveness, for the wanderer knows full well that in respect of his readmission to

the full privileges of the life corporate, the "*potestas vitæ necisque*" is not his. With the poet, the boy knows:

"I pleaded, outlaw-wise,  
By many a hearted casement curtain'd red."

When penitence is very deep a deterrent penalty may no longer be required. Yet the penitent may have no *right* to the entire remission of penalty. Forgiveness, then, is the free gift of the mediator and society to the individual. But though it is a gift *to* the individual, it is also a duty in the others. We cannot agree with Dr. Rashdall when he says that it is "sometimes our duty to punish and *sometimes* to forgive." This is narrowing the meaning of forgiveness. It is always our duty to forgive, for forgiveness is more than mere remission of penalty. It is never our duty to pass sentence of permanent exile from love. We can no longer send an individual into the wilderness to die. "The Lord is loving unto every man, forgiving iniquity and sin." Love is stated first. It may sometimes be our duty to forgo inflicting part or all of an external penalty, but we must forgive the penitent, not "sometimes," but unto seventy times seven.

### C.

Offences of impurity are admittedly in a class apart. The State ignores them except when they involve breach of the marriage contract or traffic in vice; and in school, though they meet, if discovered, with salutary punishment, they are scarcely catalogued amongst specified and indictable offences.

The frequent prevalence of this offence in schools where there is much corporal punishment suggests that there may be a psychological connexion between the two. One great objection to corporal punishment is that it necessarily violates the culprit's rights over his own body. If another person who has no such rights treats it thus, why should not the boy treat it as he please? We want the child to respect his body, but we must respect it too. May not much corporal punishment engender in the sufferer a callous indifference to the body's claim upon his self-respect?

I do not myself see that the inner process of penitence and amendment can here be adequately aroused, though it may be initiated, by the spectacle of the teacher's suffering and pity. Where it is cognized by the agent as an offence, it is yet too private to suggest any immediate connexion with a universal law or categorical imperative. Some, but inadequate, preventive force lies in knowledge of the consequences (as compared with ignorance, of course). But eventually it must, it seems to me, be directly connected with a religious principle, and there is only one available—the Pauline conception of the body as the temple of the Paraclete. Nature study and other positive instruction in the facts (not "laws") of sex provide no real moral sanction.

The teacher here must express not only his own suffering and pity, but must shadow forth that of the Paraclete. The shadow of the



Most High must rest upon him, and so make him a vehicle for conveying to the conscious culprit the spiritual significance of his offence. Indeed, the very frequency and occurrence of the offence makes the teacher's mediatory discipline more and more inseparable from a doctrine of the Holy Spirit. The adolescent offender is groping his way towards an ideal bound up with the mystery of his growth. He is gradually realizing the need for a personal religion to embody his ideal self, a Christianity, in short, to vindicate his private and public experience of offence, mediation, and atonement.

We plead, therefore, for a far closer accord between the general theory of Punishment, the educational theory of Discipline, and the Christian doctrine of Atonement. The same or parallel data belong to each, to each the ultimate solution is the same, to each must belong those facts which are summed up in the communion of saints, the forgiveness of sins, and the ministry of the Holy Ghost. And, we venture to suggest, the problem of Prayer can be brought into line with this.

## V.

Once more, our data come from the school commonwealth. When our rebel is standing in piteous isolation from the community and its head, he is conscious not only of isolation but of helplessness. Alone, as we have seen, he cannot reopen or re-enter the closed door. In that isolation and helplessness he practically makes an appeal. His whole situation demands it. The suffering, the awareness of similar suffering in another, of pity there, the struggling realization of law outraged and the newly-awakened reverence therefor, all culminate in an attitude beseeching relief. Punishment already experienced within may also be called for without, and restoration is sought. This is the attitude of prayer, of petition, of seeking relief of a need. When we wish to make prayer in other connexions intelligible, natural, a desired habit, can we not point to this experience as truly prayer? And further. The teacher as mediator is also intercessor. He stands before the class community to win back its restoration and its welcome for the offender. Not in any open or proclaimed sense. It is, perhaps, hardly perceived at all except on some extraordinary occasion. Nevertheless, this intercession is actually operative. It is more readily seen when the teacher intervenes between two disputants or antagonists in a class. But pacification is itself a sort of intercession. Thus we would attempt to bring out prayer, both personal and intercessory, as an unsuspected factor in mediatory discipline, a foreshadowing of the higher relationship of prayer as between man and the Divine. To the errant child the mediating teacher can alone bring relief, as to errant man the Comforter and Christ alone can do.

We may, perhaps, leave our suggestion here, but we venture the hope that any attempt to bring out the permanent factors involved in the teacher's experiences of discipline (in the true sense) will help us to realize more clearly the greatness of our office. Practical "tips" and devices for temporary emergencies cannot form the basis of sound theory, nor in the long run satisfy sound practice. We believe that no sound educational theory can be formed upon this subject wholly apart from questions which pertain to philosophy and theology also. If teaching is a spiritual vocation and not a sordid livelihood, it must draw from those common stocks of spiritual experience whose fruits are gathered in philosophy and theology. Only so can it thrive.

# TRAINING COLLEGE ASSOCIATION.

Twenty-fourth Annual General Meeting, January 5th, 1916.

## MORNING SESSION.

Professor T. P. Nunn, President, in the Chair.

- (1) The Minutes of the last Annual General Meeting held in Dec., 1914, were read and confirmed.
- (2) The Report and Balance Sheet for 1915 were adopted on the motion of Prof. J. A. Green and Mr. W. T. Goode.

In connexion with the Report, the President referred to the great loss the Association had sustained in the death of Capt. W. Loring; Warden of Goldsmiths' College, who was not only a highly esteemed member of the Association but also one of its most valued Presidents. It was decided to send a letter of condolence to Mrs. Loring.

- (3) The following elections for 1916 were declared:—

*Vice-Presidents:—*

Dr. Helen M. Wodehouse, Bingley College.

Mr. T. Raymont, Goldsmiths' College.

*Hon. Secretary and Treasurer:—*

Mr. H. E. Griffiths, St. John's College, Battersea.

Miss M. M. Allan, President for 1916, here took the Chair.

- (4) Hearty votes of thanks were accorded (a) the retiring President, (Prof. T. P. Nunn) on the motion of the President and Prof. J. J. Findlay; (b) the Hon. Secretary, on the motion of Miss Dunlop and Rev. Canon Dennis.

Prof. Nunn replied.

- (5) The President then delivered the Presidential Address. (v.p. 217.)
- (6) An Address was delivered by Professor Muirhead of Birmingham University, on "Looking forward in Education." (To be published in the next number of the Journal.)

Professor Muirhead received a cordial vote of thanks for his address, on the motion of Prof. J. A. Green and Prof. J. Adams, and a similar vote was accorded the President for her Address, on the motion of Prof. J. Adams.

## AFTERNOON SESSION.

- (1) The following resolution was passed unanimously, on the motion of Canon Blofeld and Mr. Hendy:—

"This Association urges upon the Board of Education the necessity of preventing, as far as possible, the lowering of the standard of education throughout the country during the war, and emphasizes the necessity of taking all possible steps to prepare to meet the grave situation which must arise after the war in consequence of the loss of certificated teachers through death, disablement, and other causes, and the falling off in the number of students coming up for training."

- (2) An address was given by Mr. Henry Wilson, President of the Arts and Crafts Society, on "Learning to live and living learning." (This paper will be published in the next issue of the Journal.)

A hearty vote of thanks was accorded Mr. Wilson, on the motion of Mr. Rayment and Miss Luard.

(3) Professor Nunn reported

that the General Committee, at their Meeting on the preceding day, had dealt with two questions: (a) the proposed alterations in the syllabus of instruction in English, and (b) the appointment of Committees to meet the Board's Examiners from time to time with regard to questions arising out of the Final Examination in the different subjects of the curriculum.

In view of the fact that a Special Meeting of lecturers in English, and others interested in the teaching of English, had been called, the General Committee felt with regard to the first question, that it would be unwise to reach any definite conclusion, and it was therefore resolved that the matter of the revision of the English syllabus should be referred to a Special Committee to be appointed.

As to the second question, it was recommended that in the case of subjects other than Geography and English, the General Committee should for this year proceed to the appointment of the Special Committees at its discretion.

The report was adopted.

(4) The following report of the Sectional Meeting on Geography (held on the previous day) was presented by Prof. Nunn, Chairman of the Meeting:—

The discussion on the Report of the Conference between the Inspectors of the Board and a deputation of Teachers of Geography in the Training Colleges was opened by Dr. Unstead. In this discussion Mr. F. T. Howard, H.M.I., who had very kindly attended the meeting at the invitation of the Association, took part.

With reference to the proposed Committee to represent the Association upon questions connected with the teaching and examination of Geography, the meeting decided to recommend to the Association as follows:—

- (i) That the Committee consist of 14 elected members, together with the President and Vice-Presidents of the Association ex officio.
- (ii) That at least 10 of the elected members be teachers of Geography.
- (iii) That the elected members be chosen approximately in accordance with the following scheme, viz.: four to represent the London and Suburban Residential Colleges, six to represent the Country Residential Colleges, four to represent the Municipal Day Colleges.
- (iv) That the Committee appoint one of its members to act as convener.
- (v) That it be an instruction to the Committee to make themselves acquainted with the views of the teachers with reference to the Final Examination, so as to be prepared, if called upon, to represent them at a meeting with the Board's Inspectors not later than the first week in March.
- (vi) That it be an instruction to the Committee and the Officers of the Association to draw up a report of any conference between the Committee and the Officials of the Board with reference to the Final Examination and to circulate it among the Training Colleges as soon as possible after the meeting, and in any case not later than the beginning of the ensuing autumn term.
- (vii) That the following teachers be members of the Committee for 1916:—Miss Allen (Salisbury), Miss Glen-Bott (Tottenham),

Miss Hardy (Leeds), Mr. Herman (Hull), Mr. Jones (Homerton), Mr. Lewis (Dudley), Miss Livesmore (Whitelands), Dr. Lloyd (Cheltenham), Miss Molloy (Furzedown), Dr. Unstead (Goldsmiths'), Miss Wadmore (Darlington).

(viii) That Dr. Unstead be appointed convener for 1916.

The report was adopted, and the following names were added as members of the Committee:—Mr. Jarvis (St. Mark's, Chelsea); Dr. Sleight (Graystoke Place); and Miss Wood (Home and Colonial).

(5) The report of the Sectional Meeting on English was presented by Miss Allan, Chairman of the Meeting, and the following were the recommendations:—

- (i) The Special Committee to report at the earliest possible date any conference with the Board.
- (ii) The Committee to consist of 24 members, it being felt that as English is a compulsory subject, and also that there is anything but a consonance of opinion in regard to the teaching of English, it would be better to have a rather larger number of members.
- (iii) The classification of colleges to be the same as in the case of the Geography Committee. The following were nominated to serve on the Committee:—Miss Hawtreay (Darlington), Miss King (Cheltenham), Miss Monk (Homerton), Miss Evetts (Salisbury), Miss Earle (Saffron Walden), Miss Boaler (Chichester), Miss Christopher (Durham), Miss Clout (Tottenham), Miss Luard (Whitelands), Miss Stephenson and Miss Dunn (St. Gabriel's), Miss Hopwood (Graystoke Place), Miss Cumberbirch (Hull), Miss Gough (Dudley), Miss Annakin (Leeds), Miss Lloyd Evans (Furzedown), Miss Davis (Bingley), Miss Walker (Leeds), Miss Dunlop (Saffron Walden), Miss Thomas (Durham), with the President and Vice-President *ex officio*. Miss Stephenson to act as convener.

The report was adopted, after it was decided that in the case where two members of the same college were nominated, one should retire unless *ex officio* (an exception being made for the current year in the case of St. Gabriel's College). As a consequence of this decision, Miss Dunlop, Miss Walker and Miss Thomas retired, while Mr. Dean (Exeter) and Mr. Griffiths (Battersea) were elected to serve.

(6) The following was decided as an instruction to the Committee, upon the motion of Dr. Unstead and Miss Catty:—

“That in accordance with the constitution of the Committee, its representative Sub-Committee should consist of an equal number of Principals and Non-Principals.

It was also decided that the representative Sub-Committee should consist of 16 members (four in each group, the group to consist of two Principals and two Non-Principals, the two being a man and a woman).”

(7) Rule 7, was amended to read as follows, on the motion of Miss Luard and Dr. Unstead:—

“The General Committee shall consist of the Principal (or Head of the Training Department) of each College, and one member from the Staff of



each College. In the case of a Mixed College, the members representing that College on the Committee shall be the Principal (or Head of the Training Department), the Vice-Principal, if a woman, (or Head of the Women's Training Department), and also a woman member and a man member of the Staff of the College—the second member in the case of the former kind of College (not mixed) and the third and fourth members in the case of the latter kind (mixed) to be elected by the members of the Association in the College.

- (8) It was decided that the Committee should prepare a re-draft of the Constitution of the Association during the year, and present a report on the same at the next Annual Meeting.

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## REVIEWS.

**Education and Social Progress.** By Alexander Morgan, D.Sc. Longmans and Co. (pp. vi. + 252.) Price 3s. 6d.

AT the recent Educational Conference it was evident that reflection on certain aspects of the war was leading to much heart-searching as to the adequacy of our system of education. The moment is opportune, therefore, for the reception of a book which deals with educational problems in relation to wider social issues.

Though Dr. Morgan firmly believes that education is the chief factor in social progress, he yet attributes the chronic evils of pauperism and crime, not only to defective heredity and defective environment, but to our defective system of education. Public education aims at producing in each individual "a trained mind, a well-formed character, capacity for citizenship, and for some work useful to the community." It can only achieve these aims if its methods take account of natural capacity and the needs of the young at each stage of their development. At present procedure in the primary schools reveals an absolute neglect of child psychology, whilst the inadequate provision for the education of youth leads to a waste of possibility which is appalling to contemplate. Those who have studied our educational system have long realized these evils, and they will welcome Dr. Morgan's earnest insistence on the urgent importance of immediate reform. His suggestions concern primary education proper, the problem of pupils from 12—14, and the problem of young people from 14—18.

Primary education must be made more *practical*. By practical the author does not mean vocational, nor does he refer specially to manual work. It is a change of spirit, of outlook, and of method that he advocates—an education that would give not only "more freedom for the expression of the child's own nature," and "greater scope to his love of activity," but which would recognize as fundamental the truth that there is no lasting impression without expression through some motor outlet. Thus, like Dewey, he would have more account taken of the child's social activities, and "schoolrooms should be furnished for doing and not solely for listening."

Adequate provision—possibly in special schools—should be made for boys and girls from 12—14 years. Their education should be semi-vocational in character, though cultural aims should not be ignored.

Further, unless the whole of the results of primary education are to be lost, the training of the young must not come to an end on the brink of adolescence. For a variety of reasons, the present system of evening continuation classes has failed. The State should limit the hours of employment of young people, and make attendance at day institutions for further education compulsory on all. Expert artisan teachers, and persons having special knowledge of the tastes and needs of adolescents, should be employed to give a training, which should be vocational in character.

The best chapters of this suggestive book are concerned with the education of children under five, and of defectives, and with a survey of the work done in connexion with education by the Department of Public Health.

The book can be recommended as a valuable contribution to educational thought.

N. G. R. TAYLOR.

**The Lesson in Appreciation.** By F. H. Hayward, D.Lit. (xv + 234 pp.) Macmillan. 3s. 6d. net.

Dr. Hayward's book deals with a subject the importance of which is being increasingly recognized, and it goes without saying that his treatment is at once stimulating and suggestive. The determination of the psychology of appreciation, especially in the case of school children, is difficult and elusive. In the æsthetic sense, at least, appreciation implies emotional excitement, corresponding in some degree to the emotions of the artist himself at the creative moment. The difficulty of the teacher lies very largely in two directions. In the first place, the occasion of the emotion roused in the artist may be one into which an immature or uncultivated mind cannot enter. A Grecian urn, or intimations of immortality, or the lisps of a child may stir the heart of a scholar or a philosopher, or a middle-aged man, but, in these cases, the appeal of the poet is only to the elect. In the second place, the actual form into which the artist has expressed himself may present such difficulties that the effort to overcome them bars every other feeling than that of disgust, and so boys come to look on classical literature as invented for the purpose of school lessons and examinations.

If this expresses the position fairly, is it not of particular importance to consider the limits within which we may hope to secure appreciation? Dr. Hayward might well have given an introductory chapter to the consideration of what seems to be a fundamental question. School literature, at least, suffers enormously from the neglect of clear ideas in this regard. How often do we sow literature and reap "tosh"? Probably school music suffers in just the opposite way. Musical taste suffers because we neglect what is good and favour what produces cheap effects. As an outcome of these general considerations, some indication or discussion of progress in appreciation would have been particularly helpful. It is true that the field is largely an unworked one, but if an attempt had been made to analyze the situation and illustrate it by citing some of the examples of mistaken practice which must crowd Dr. Hayward's inspectorial notebooks a great practical service might have been rendered.

Granted a right choice, appreciation is largely conditional upon the way in which the work of art—especially if it be literary art—is presented. Here Dr. Hayward has perhaps been most successful. His work would, I think, have been clearer had he shed for the time being his Herbartian predilections. It is surely only a distraction of interest to describe the five steps in this connexion even in a footnote. Inevitably, it seems to me, Dr. Hayward has been led into the mistake he is anxious to avoid; he has made his treatment too intellectual. He is surely right in his claim that the lesson in appreciation should be a red-letter day, but if his scheme of "pioneering the metaphors" is to operate, that red-letter day will soon become too obvious an artifice for effective school use. The red-letter days which were really epoch-making in our lives have been unexpected. They have stood out in experience for that very reason. That which we know is regularly recurrent, still more that which has been puffed up beforehand as a great occasion, is apt to lose its flavour or to be a great disappointment. In our adult world, a carefully fostered public opinion or a fashionable cult may compel us to hide the realities of our experience, but schoolboys are happily more naïve.

What is incidental in the pupil's experience need not be planless for the teacher, who will find much in the book to direct and inspire him. Even at the risk of appearing to be over-critical, one may regret that Dr. Hayward has not emphasized still more the importance of reading aloud. There would, in my view, be a great gain if the story lesson could be largely replaced by the teacher reading from actual

texts. A little girl of my acquaintance, who happened to be included in a family "reading" party, said how much better she liked stories to be told than read. "Our teacher always tells us stories because the books have so many hard words in them." She was three years older than any of the rest of the party, who found no difficulty in appreciating the story in its original setting just because they had had their stories in that fashion from their fourth year onwards. Again, boggling over words is, I think, hardly sufficiently discouraged. Indeed, Dr. Hayward suggests a practice which, from the standpoint of his book, would seem to be baneful in the extreme—the collection in a notebook of strange words and words difficult to spell from the novels that are read. How quickly reading degenerates into a hunt for words as such many teachers have found to their regret.

Dr. Hayward set out to write a book dealing with an actual situation. He has, however, frequently and wisely run off into general discussions, which will clear up some dark places in the practice of the thoughtful teacher who happens to read them.

J. A. G.

**Psychology of High School Subjects.** By Professor J. C. Judd. (ix. + 515 pp.) Ginn & Co.

Professor Judd undertook a difficult task when he essayed to set out the psychological processes involved in the acquisition of the ordinary secondary school subjects under the guidance of the teacher. His reputation as a psychologist seemed to fit him admirably for the task; only one wondered whether his acquaintance with current practice in schools might prove insufficient. It may be said at once, however, that he has given us a book of great value. Its freedom from technicalities will make it widely accessible to teachers who start its perusal with relatively little psychological knowledge, and they cannot fail to gain truer insight into the mental processes which they are trying to stimulate.

The author's method varies somewhat from subject to subject, but in general he opens his chapter by a discussion of the mental activities involved in learning Geometry, History, or such other subject as he is at the moment treating. Then follows a critical examination of a monograph, or of divergent views as to methods of teaching that subject, and finally comes a visit to a class at work. The author describes what he sees from the standpoint of the methods and difficulties actually operating in the pupils' minds, with a psychological analysis of them. He does not prescribe methods, but lays bare the mental factors involved, and leaves the teacher to evaluate his own practice.

Not unnaturally, the text books quoted are all American. Had Professor Judd seen Professor Nunn's recent books on Algebra and Trigonometry, he would have found many of his suggestions already worked out in eminently practical ways. Similarly one could have wished him familiar with some of our recent text books of Elementary Science and Nature Study, as showing what some of the schoolmasters in "examination-ridden" England are doing.

Perhaps the most important and attractive chapter is that in which he discusses "Formal Training." This sanity of treatment will be found by many a welcome antidote to certain claims which seem almost to suggest the possibility of basing a theory of life upon experimentation with nonsense syllables.

J. A. G.



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## METHODS OF EXPRESSION USED BY LONDON CHILDREN IN ESSAY WRITING AT DIFFERENT AGES.

BY C. W. KIMMINS, M.A., D.Sc.

THE following investigation on methods of expression used by children at different ages is based on a careful examination of essays written by children on the War. The conditions under which the essays were written were such that the children's attention was focussed on writing as much as possible in a limited time on a subject in which they were deeply interested, and on which they could write far more than was possible in the time allotted. No notice was given, and the children were simply told to write as much as they could about the War, and that they would only be allowed fifteen minutes for the essay. In these circumstances the children would naturally use the forms of expression which would best suit their purpose.

The essays were written by all the children in five girls' and five boys' schools, the total number of children being 3,081—1,570 girls and 1,511 boys. The schools selected for the purpose were fairly typical elementary schools in various districts.

An analysis was made of the kind of sentences employed in the essays, as shown in the following scheme:—

- A. *Unrelated simple sentences* containing only one verb, and having no connexion with adjoining sentences.  
e.g. We are fighting against the Germans. Our soldiers are sleeping in the trenches. We have a lot of hospitals.
- B. *Related simple sentences* containing only one verb, and having a connexion in thought with adjoining sentences.  
e.g. England and her Allies are fighting against the Germans. The Germans are being helped by the Austrians and the Turks.
- C. *Double or Multiple sentences* containing more than one co-ordinate verb.  
e.g. Our soldiers marched quickly and took the trenches, and made the Germans in them prisoners.
- D. *Complex sentences* containing dependent clauses introduced by relatives or such words as "if," "so," "for," "when," "because," "although."  
e.g. (a) The Belgians have come into England because they know that we look after them carefully.  
(b) Our soldiers, although they know they may never come back, are always merry.
- E. Sentences with verbs in the *present* tense.  
e.g. I often read the newspaper in the evening, and I am so glad when there is a British success.
- F. Sentences with verbs in the *past* tense.  
e.g. The Kaiser first started this war. He wanted to have Belgium.

- G. Sentences with verbs in the *future* tense.  
e.g. This war will last a very long time.
- H. Sentences expressing personal *feelings*.  
e.g. When I think of so many brave men being killed it makes a shiver go down my back.
- K. Sentences containing personal *observations*.  
e.g. I have also seen men walking about Rotherhithe and Bermondsey with a fez on their heads, and I have often wondered who these men are.

The results of the analysis are given in the percentages of sentences in the essays included under the different headings. They are as follows:

GIRLS.									
	A	B	C	D	E	F	G	H	K
Average percentage for children of 8 years of age.	34.1	39.9	14.7	11.2	84.2	14.6	1	3.9	16.7
Average Percentage for children of 13 years of age.	5.2	25.6	14.5	54.6	62.7	35.1	2.2	8.4	4.6
Average percentage for children of all ages from 8 to 13 inclusive	18.4	31.2	13.3	37.1	72.4	26.1	1.6	8	9.5

BOYS.									
	A	B	C	D	E	F	G	H	K
Average percentage for children of 8 years of age.	33.9	32.6	16.7	16.7	82.3	13.5	2.2	2.5	2.1
Average percentage for children of 13 years of age.	5.2	38.6	14.8	41.2	53.2	43.5	3.1	1.2	1.8
Average percentage for children of all ages from 8 to 13 inclusive	16	38.4	14.4	29.6	55.8	41.2	2.8	2.3	3.2

The number of essays examined is sufficient to warrant fairly definite conclusions with the older children. Naturally, however, there are comparatively fewer sentences in the essays of the younger children, and therefore the results obtained in connexion with them must be accepted with more reserve.

Great care was taken to maintain the same standard throughout, and border-line cases were carefully considered in connexion with the category in which such sentences should be placed. The decisions arrived at were applied to similar cases throughout the investigation.

### Unrelated Simple Sentences.

**8 Years of Age.** The percentages of unrelated simple sentences of the 8-year-old children in the different schools vary considerably, although curiously the total average for the girls' and boys' schools are close together, namely, 34.1 and 33.9 per cent respectively. The numbers vary from 22.5 to 46.2 in the girls, and from 22.7 to 44.3 per cent in the boys' essays.

**13 Years of Age.** Here the results are also very close together, and, apart from one girls' and one boys' school where the results are abnormally high, the percentage never exceeds 5, and in one boys' school sinks as low as .7.

**General.** The elimination of the unrelated simple sentence in essay writing has evidently been carried out successfully in nearly all the schools at which the children were educated. In the two very marked exceptions the use of this type of sentence was abnormally high at the age of 8, and throughout the different ages the percentages were much higher than those of the other schools. As a rule there is a very rapid falling off in the use of this type of sentence at the ages of 10 and 11. The better the type of school the sooner this form of expression tends to disappear. There appears to be no marked difference in the method of expression of the girls and boys as far as this particular kind of sentence is concerned.

### Related Simple Sentences.

**8 Years of Age.** There is a great difference between girls and boys in the use of the simple related sentence at this age. The girls use it much more than the boys, the average for the girls' school being 39.9 as against 32.6 per cent for the boys, and this is fairly constant throughout the schools, e.g., in three out of the five girls' schools the percentage is over 40, whereas in the boys' schools this percentage is not reached in any case.

**13 Years of Age.** Here again the difference between the girls and boys is very marked, as there is a great falling off in the use of the related simple sentence, due to the greater use of the complex sentence, by the girls, and this is quite general. On the other hand the tendency with the boys is to increase, and this is also a general tendency. The consequence is that the average percentage for this age is for the girls 25.6 and for the boys 38.6.

**General.** The fact that whereas at 8 years of age the girls use the simple related sentence far more than the boys, and that the girls of 13 use it far less than the boys, is important because it is general, and is not in any way the result of abnormal numbers in particular schools. The significance of this will be discussed later. The difference is not confined to the ages of 8 and 13. The average percentage for all ages is 31.2 for the girls as against 38.4 for the boys.

### Double or Multiple Sentences.

**General.** As seen by the table of results of the analysis there is very little difference in the use of the double or multiple sentence at the ages of 8 and 13 respectively, and the girls do not differ materially



from the boys. There is a tendency to decrease somewhat in the middle of the school, but the differences are trifling and follow no general law. The average percentage for the girls of all ages is 13·3, and that of the boys is 14·4. It will thus be seen that throughout the boys use this type of sentence rather more than the girls, but the difference is very slight. In fact, the use of the double or multiple sentence is the most constant element in the essays.

### Complex Sentences.

**8 Years of Age.** The difference in the use of the complex sentence is somewhat marked, the girls' average being 11·2 and that of the boys 16·7. The results of two girls' schools were abnormally low for children of this age, but apart from this the boys' results were distinctly higher than those of the girls.

**13 Years of Age.** Here the girls outclass the boys entirely in the use of complex sentences, and there are no disturbing factors in the direction of abnormal results from particular schools. The average for the girls is 54·6, that for the boys 41·2 per cent. Moreover, in four out of the five girls' schools over 50 per cent of the sentences were complex, whereas this percentage was not reached in any boys' school.

**General.** The results obtained in connexion with the use of the complex sentences are very striking. The far greater increase in the employment of this method of expression by the girls is unmistakable. The girl in passing through the school makes increased use of the complex sentence, the percentage rising from 11·2 to 54·6, a difference of 43·4; whereas the boy only increases its use from 16·7 to 41·2, a difference of 24·5, during the school course. This is very significant, and will be discussed later.

### Sentences with Verbs in the Present Tense.

**8 Years of Age.** The amount of employment of the present tense is very constant for both boys and girls. The percentage is in every case about 80. The actual figures are 84·2 for the girls and 82·3 for the boys.

**13 Years of Age.** At this age the girls use the present tense far more than the boys, the average percentage being 62·7 as against 53·2 for the boys.

**General.** The less use of the present tense by the boys is general above the age of 8, and the average percentage for all ages is in the case of the girls 72·4, whereas for the boys it is only 55·8. It is to be noticed, in examining the percentage at different ages, that the rate of falling off in the use of the present tense becomes more marked at about the age of 11, and this continues to the age of 13. This tendency is common to boys and girls.

### Sentences with Verbs in the Past Tense.

**8 Years of Age.** The results are somewhat disturbed by an abnormally high percentage in one boys' school. The average percentage of the girls is 14·6 as against 13·5 for the boys. Apart from the disturbing factor referred to, the positions would have been reversed. The differences, however, are so slight that it is a matter of little importance.

**13 Years of Age.** At this age the girls use the past tense much less than the boys, the percentages being respectively 35·1 and 43·5.

**General.** That a far greater use of the past tense is made by the boys than the girls is clearly shown by the average percentage for all ages, namely, 41·2 and 26·1 respectively. The reason for this will be discussed later.

### Sentences with Verbs in the Future Tense.

**General.** The future tense is so little used in the essays that the slight variations at different ages do not warrant any conclusion. These variations, moreover, are sporadic, and do not follow any natural order. The subject of the essay is one which does not admit of much useful employment of the future tense.

### Sentences expressing Personal Feelings.

**8 Years of Age.** The results are very interesting. They vary considerably from school to school, but not sufficiently to vitiate the results. At this age the girl expresses her personal feelings much more than the boy. The difference is represented by the percentages 3·9 for the girls and 2·5 for the boys.

**13 Years of Age.** At this age the differences are much more striking. The percentage for the girls has increased to 8·4, while that for the boys has decreased to 1·2.

**General.** The average percentage for all ages is 8 for the girls and 2·3 for the boys. The percentage at one girls' schools is very high, but it does not seriously affect the result. Throughout the percentages for the girls are much higher than those for the boys.

### Sentences containing Personal Observations.

**8 Years of Age.** The differences at this age are very marked. The percentage for the girls is 16·7 as against 2·1 for the boys. In no boys' school does the number of sentences of this type reach 5 per cent.

**13 Years of Age.** The percentage is now 4·6 for the girls and that for the boys has fallen to 1·8. Here also the numbers are very near together in the different boys' schools, 2·5 being the highest percentage.

**General.** The average percentage for all ages shows clearly that the girls make many personal observations on such a subject as the War. The difference is represented by the percentages 9·5 for the girls and 3·2 for the boys. In the use of this type of expression the results from different girls' schools differ considerably, whereas with one exception the results for the boys are very close together.

### Summary of Results.

The most interesting points which emerge from the investigation of methods of expression used by children at different ages are the following:—

1. As the child passes through the school the unrelated simple sentence is generally successfully eliminated. Out of ten schools from which the essays were obtained, only one girls' and one boys' school failed to reduce the percentage of this type of sentence to 5 per cent. In both of these schools the percentage at 8 years of age was abnormally high.

2. Girls and boys use the unrelated simple sentences to much the same extent, and in each case the maximum falling off in its use occurs at about 10 years of age.

3. In the use of the related simple sentence a great difference is to be noticed between boys and girls. At 8 years of age its use by the girls is much greater than by the boys, but at the end of the school course the boys use it far more than the girls.

4. Corresponding with the greater use of the related simple sentence by the girls of 8 is to be noticed the greater use made of the complex sentence by boys of this age. Two years later both these positions are reversed.

5. The use of the multiple sentence by girls and boys is practically constant from 8 to 13 years of age.

6. There is a very striking difference between girls and boys in the employment of complex sentences. At 8 years of age the girls use them less than the boys, but from this age onwards they make much more use of them, the increase in the percentage of these sentences from 8 to 13 years of age being in the case of girls 43·4, whereas the increase in that of the boys is only 24·5.

7. A striking increase in the use of complex sentences by the girls occurs at the age of 9, and still more at 10 years of age. Then the percentages increase at a fairly constant rate to the age of 13. With scarcely any exception the highest point is reached in the top class. With the boys it is different: there is no age at which there is a great increase in the employment of this form of expression. Its use increases more or less regularly from 8 to 13.

8. In specially backward classes there is generally a falling off in the use of the complex sentence, and where a school is organized in parallel classes of forward and backward children there is a marked difference in the extent to which complex sentences are employed.

9. There is very little difference between girls and boys in the use of the present tense at the age of 8. There is a fairly rapid decrease in its use in both sexes at about the age of 11. At the age of 13 the girls use it much more than the boys.

10. Boys of more than 8 years use sentences with verbs in the past tense much more than girls. The use increases with boys and girls from 10 years of age onwards.

11. There is a very striking difference between girls and boys in the use of sentences expressing personal feelings. The girls make far greater use of them than the boys. It is marked at 8 years of age, but far more later on, as the percentage in the case of the girls increases whereas that for the boys decreases. At the age of 13 the percentage is seven times as great as that of the boys.

12. The girl of 8 describes what she has observed herself far more than the boy of the same age. This holds good for other ages, but there is naturally a falling off in the number of sentences containing personal observations in essays on such a subject as the War, as the age of the child increases, and local details cease to hold an important position.

### Conclusions.

The subject of the essay undoubtedly had a definite effect on some of the results, e.g., the boys were more interested than the girls in dealing with the history of the events leading to the outbreak of the War, and this affected the greater use by them of the past tense in sentences dealing with this part of the subject. On the other hand, complex sentences were much used in this connexion, and, if there had been



less reference to the origin of the War, the greater use of this type of expression by the girls would have been still more marked.

The analysis fully confirms the impression formed in reading the essays that boys are far more interested in the normal events of the War, and like to describe the details in an impersonal manner. This explains the fuller use made by the boys of the related simple sentence. They are far less interested in discussing the effects of the War, and do not indulge in personal reflections. The girls are more reflective throughout. They care less about the details of the War. They prefer rather to discuss than to describe. The girl is far more emotional, and her indignation at the cruelty of the Germans results in a well-marked bellicose attitude at the age of 10. She reasons more, and this involves a far greater use of the complex sentence. Although the subject of the essay affects the results, this attitude of mind is so well marked that it would find expression in dealing with subjects other than the War. The larger proportion of sentences used by the girls expressing personal feelings is closely related with the greater use of the complex sentence.

The falling off in the use of the present tense at 11 years of age, and the increase in the use of the past tense, coincides with the marked development at this age of an interest in the past, especially in the case of the boys. In the subject selected for the essays this finds expression in descriptions of the origin of the War.

On the whole, the girls are in advance of the boys in the use of complex sentences, the number of personal observations, the expressions of personal feeling, and in their judgments on the moral conduct of the War. On the other hand, the boys show a greater interest in causation, and deal more effectively with the origin of the War.

The exceptionally large proportion of sentences containing personal observations used by young girls represents the interest taken by girls of 8 and 9 in local colour. The wounded soldiers, the Red Cross nurses, and the sufferings of relatives are of more interest to them than the details of the War.

As we pass through the school the connexion of related simple and complex sentences extends from adjoining sentences to groups of increasing dimensions, frequently resulting at the age of 13 in the grouping of the material of the essay into definite paragraphs. This marks a great advance.

The special subject of the essay must, as previously stated, have exercised a certain influence on the methods of expression used by the children. Nevertheless the conclusions reached in the investigation would apply generally with comparatively slight modifications, such as those referred to above, to essays on other subjects. The results, therefore, are sufficiently suggestive to warrant further investigation because, if norms for methods of expression used by children at different ages could be obtained, they would be of the highest value.

Indirectly this investigation of the methods of expression used by girls and boys at different ages has done much to confirm the more important conclusions arrived at in my previous investigations of the interests of children at different ages in such subjects as the War and air raids.

In connexion with this inquiry, I have to acknowledge, with many thanks, the assistance of Dr. Boas, who has given me many useful suggestions, and of Mrs. Bannister, whose careful work in connexion with the analysis of the essays has been of the greatest service.



## ERRORS IN ARITHMETIC.

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ERRORS in Arithmetic are only too often classed as being due to one of two causes, want of knowledge of method or carelessness; and teachers are strangely at fault in blaming for so-called carelessness. While readily admitting that scholars would prefer to have all sums correct, they blame them for carelessness in making mistakes, and judge as if the carelessness were intentioned—a one-figure slip in a ten-figure sum, an imperfectly memorized table, unfamiliarity with a method at the initial stages, all are placed together. This rough and ready method of judging raises some interesting questions, and suggests an examination of errors to see how far it is good, and to what extent it is of value in the work of the class-room. Even the most superficial examination of errors shows its unfairness, and of how little use it is in giving help to attack failings or to remedy faults.

The investigation arose from such considerations following on the continued bad work of a class; its object was to find the cause, and, if possible, to obtain a remedy. The problem determined the conditions of the work undertaken; errors in a regularly recurring series of ordinary class tests were examined and classified. The children whose work was examined were from 8 to 10 years of age; the average size of class was 40 pupils; the work examined was simple addition, subtraction, multiplication, and division. The tests were purely mechanical, and the work of classification was thereby simplified. The examples noted are as they were taken from the papers.

*Preliminary test.*—The errors in a weekly arithmetic test were analyzed as a preliminary. Without discussing fully the reasons for, and justification of, the conditions, it will be sufficient to state that as the errors in ordinary everyday work were under consideration and remedies for these required, no special tests were set. As a result of the analysis, a maximum limit of errors due to carelessness for the test was 10%, and 70% was due to a lack of power to sustain attention. Suggestion as to common types of errors was got, and the point was raised as to the position of error in the sum. It was noted that many errors in addition occurred in the higher figures, thousands, hundreds, &c. In division, on the other hand, errors occurred frequently in the units figures and with the remainder. Class tests were analyzed for ten weeks, and some further points for examination arose.

A rigorous examination of three months' tests of two classes was then undertaken. The position of errors was noted, the number of sums wrong in one figure only, and the number of errors due to wrong carrying or inability. Before discussing types of errors it will be well to say a word as to the result on those other points. Under the head of inability were classed errors arising from want of knowledge of method, want of knowledge of tables, and, what was rare, deficiency. Even with the term so wide the number coming under this head was small. In a young class the error was  $1\frac{1}{2}$  per cent. of the sums given, and in an older class, where the sums were a little more difficult,  $3\frac{1}{2}$  per cent.

With respect to the "position" errors the analysis seemed to give as a general result a wave-like graph. But the point is reserved for fuller treatment in another paper.

In the first part of the following discussion examples of errors are given to introduce terms used throughout and to illustrate their meaning. The errors are then discussed under the heads of addition, &c., and those peculiar to each operation noted.

*Carrying.*—One type of error common to all the simple operations is caused by wrong carrying. Analysis of ten tests gave the following result: In a young class 34 % of the total errors was due to this; in an older class 26 %. This is a type of mistake to be expected in the initial stages of learning the fundamental operations in arithmetic. The child has several difficulties to fight against—(1) Imperfect knowledge of method; (2) memory difficulty in carrying over; (3) difficulty of sustaining attention; (4) mechanical difficulty of making figures. Under the head of method itself there are at least three difficulties in such sums as subtraction—(1) paying back; (2) making up; (3) subtracting. In many of the errors arising from carrying, other complications have acted, and these will be noted in the course of the analysis.

*Omission.*—1. Addition. A type of error, arising from somewhat similar causes as carrying, but not so frequent, is that of omission. In the course of his working the child loses a figure, and this is often helped by other complications. The error occurs frequently in addition and occasionally in multiplication. In addition, the first figure of the sum may be omitted, as in A1. Sometimes the top figure of a line is

A 1. . . . 75	A 2. 9015	A 3. 8593
. . . 56	6108	5678*
. . . 68	72	458
. . . 47*	780	96
<hr/>	1018	5608
. . . 39	3020	<hr/>
		20,425
	<hr/>	
	19,993	

omitted. In A 2, either the 2 to be carried from the first line has been dropped, or the 2 in the second line has been omitted. The probability is that the 2 of the first line has been added and the 2 of the second line omitted, the two similar figures coming together being the cause of the omission. In A 3, omission explains the error, the cause of the omission as in A 2. An 8 has been omitted in the first line: one would feel inclined to say the topmost 8 is the figure left out. The next example presents a peculiar case. In the first example, a looseness of concentration might account for the slip at the beginning and an easing off for that at the end of the work. In A 4, neither of these furnishes

A 4. 1 0 4   5	the explanation. The 0's seem to have in-
9   6   3	fluenced to error. In the units, tens, and hun-
9 6   0 0	dreds lines, the figures above the 0's have been
4 0 0 2	added, and there has been no carrying.
<hr/> 6 1 2	

2. Multiplication. The few examples in multiplication, such as

M 1. 8,369,472
<hr/> 7
587·6304

are easily accounted for. The sum is long and demands continued attention. The 6 of the answer, in the multiplicand and in the partial answer,  $9 \times 7 = 63$ , seems to have had some attraction towards error. This may be compared with A 2 and A 3 above.

In Division, examples of omission are common, but the cause of error is definite, and different from that noticed above. The type will be discussed under Division.

**Inversion.**—Addition. One of the commonest types of error, especially with younger children—one which may be looked for in every test—is that of inversion. In addition we get A 5. 7227 for 2727. The mistake is common in addition and multiplication, seldom found in subtraction, and is occasionally met in division. In the case above, an inducing cause seems to have come in to produce the error—that of attraction, a source of error which will be referred to later. Another example of the same kind is seen in A 6, where we have 71,724 for 17,724. A common form of it is shown in such a sum as A 7, where, the total of the units line being 16, the 1 is written and the 6 carried.

2. Multiplication.—The type is very common in multiplication, and often occurs accompanied by some difficulty other than the straight-forward working. A few examples may be discussed.

M 2. 86	M 3. 95	M 4. 95	M 5. 73	M 6. 36	M 7. 748
2	10	10	11	9	9
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
712	905	590	083	315	6642

M 2 is a simple example of the error. It occurs in various forms. In M 3 and M 4 a 10 difficulty has been introduced, and this may have had something to do with the error. Again, in M 5 the child might have avoided the mistake if his hold on notation had been sufficiently strong. In these examples the error occurs towards the end of the sum, where weakening of control of attention, or weakening of concentration, might be advanced as a cause, but in M 6 and M 7 we have it showing at the beginning and in the middle respectively. M 8 and M 9

M 8. 6980	M 9. 9708	M 10. 935017 × 42	M 11. ... 287
9	6	3	9
<hr/>	<hr/>	<hr/>	<hr/>
57870	56484	.....	... 673
		8	
		.....	

are examples in which inversion is carried through the sum. In M 10 it appears in another form. In M 11 attraction may have played a part, 7 being the attracting figure.

3. Division.—Examples are not common in division, but we find such examples as D 1, D 2, and D 3.

D 1. 6) <sup>4</sup> 143	D 2. 9) <sup>4</sup> 5854	D 3. 9) <sup>8</sup> 17683 ...
240—3	950 + 4	1994 ...

In 71.3.16 we find the mistake entering into the date; 71 is put for 17.

An analysis of a badly-done test done by an 8-years-old class gave the following result:—

		+ n.	- n.	× n.	÷ n.
Inversion	... ..	1	0	9	0
Carrying	... ..	3	8	11	10

A complication was introduced in the subtraction; 0 and 9 occurred in the lower line, so that errors in the subtraction column may have been due to the complication.

**Attraction.**—A type of error common to all the operations, and one under which a large number of the mistakes in this field of arithmetical work falls, is that due to attraction. The mistakes coming under this head take various forms, but have this in common—some figure near has an influence in producing error. It is a kind of impersonal suggestion.

1. Addition.—Examples of this in addition have been discussed under Omission. The next example, A 8, is interesting, and admits of a

A 8. 7983      simple explanation: 5 is the attracting figure;  
       6504      the 5 tens in the answer, and the 5 in the lower-  
       8765      most place in the next column causes 5 to be added  
       4938      to the hundreds column. In the next line 4 is an  
       2567      attracting figure; the 4 to carry leads to the omis-  
       \_\_\_\_\_      sion of the 4 in the next column.

27057      2. Subtraction.—In subtraction we have such error as in S 1. Here the 5 in the hundreds place has evidently

S 1. 9436	S 2. 5417	S 3. ... 03
2896	3809	... 76
_____	_____	_____
5540	4608	... 37

attracted a 5 to the next. Again, in S 2, the 4 in the minuend and the 4 in the subtrahend has produced the 4 in the answer. These examples can be multiplied indefinitely. The error may be "helped" by the introduction of other difficulties, as in S 3, where the 0 difficulty enters. The 7 in the answer and the 3 in the top line help to produce error.

3. Multiplication.—The type becomes more common in multiplication, and shows the same varieties. Some are noted.

M 12. 359	M 13. 635	M 14. 859	M 15. 49
3	4	3	9
_____	_____	_____	_____
3077	5540	1977	451

In M 12 the attraction is obvious—the 3 has hold of the mind and 3 goes down in the answer, one and 0 so one 3 and 0. In M 13 the explanation is different. The 5 of the hundreds place in the answer exerts its influence on the next figure, hence the error. This, again, explains such a mistake as that in M 14— $8 \times 3 = 18$ , the 8 of the multiplicand suggesting the 8 of the 3 table. Such would explain the error in M 15, the 9 in this case influencing the carrying, and so 9 is carried, giving 45 in place of 44. Many other mistakes in multiplication admit of such

M 16. ... 598	M 17. ... 9654	M 18. 923728
6	8	8
_____	_____	_____
... 598	... 7032	7392824

an explanation. The explanation of M 16 is given by this— $9 \times 6 = 54 - 4$  has been used already; 5, the next number, is added, giving 59 instead of 58. Another form is seen in M 17. An explanation is  $6 \times 8 = 46$ , where the 6 exerts an attraction. In M 18 the attraction is carried from the 7 to the next multiplication, and we have  $3 \times 8 = 27$ . Still another variation is seen in M 19, where we have  $9 \times 8 = 81$ , the 8 being the cause of error, producing the 81 of the answer. In M 20 4 is the figure which is the cause of offence and the source of attraction. M 21 is a peculiar case. The 8 of the multipli-



cand has "absorbed" the multiplier, 7, entirely, and we have multiplication by 8 instead of by 7.

$$\begin{array}{r} \text{M 19. } 29408 \\ 8 \\ \hline \end{array}$$

$$\begin{array}{r} \text{M 20. } 29408 \\ 8 \\ \hline \end{array}$$

$$\begin{array}{r} \text{M 21. } 70658 \\ 7 \\ \hline \end{array}$$

$$244264$$

$$234464$$

$$565264$$

4. Division.—Attraction explains a large proportion of errors in

$$\begin{array}{r} \text{D 4. } 2)17 \\ 6+1 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D 5. } 5)184 \\ 36+3 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D 6. } 2)769 \\ 384+4 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D 7. } 5)184 \\ 34+1 \\ \hline \end{array}$$

division. In its simplest form we find it in D 4: the 6 of the 16 is put in the answer instead of the 8. Another variety is seen in D 5, where the 3 in the answer and the 3 carried is the source of attraction. Again, in D 6 the explanation seems to be 1—4 over, and the 4 is put in the answer. The reverse of this is seen in D 7, where we have 1—4 over, and the 1 goes into the answer. Still another form is seen

$$\begin{array}{r} \text{D 8. } 2)769 \\ 364+1 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D 9. } 7)3596 \\ 370+6 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D 10. } 6)3920 \\ 658+2 \\ \hline \end{array}$$

in D 8, where 6 is the attraction and cause of error. Other varieties of error in simple division which might be classed here will be discussed later. In more extended division the same errors occur. In D 9 the source of attraction is the 3, and the explanation of the error is simple— $35 \div 7$ , 3 times,  $3 \times 7 = 31$ . The explanation of D 10 is  $20 \div 6$  gives 18 ( $6 \times 3$ ) + 2, the 8 goes into the answer. This is a form which occurs frequently.

$$\begin{array}{r} \text{D 11. } 9)5854 \\ 950+4 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D 12. } 5)80683 \\ 16156+3 \\ \hline \end{array}$$

D 11 may be compared with D 10. The error in this case may arise either from the same cause as D 10, or, what is quite probable, from inversion. D 12 is another simple example of the error, the 5 being the attracting figure. In D 13, the 7 supplies the attraction—the 7 in

$$\begin{array}{r} \text{D 13. } 3)539 \\ 177+2 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D 14. } 8)148937 \\ 183 \dots \\ \hline \end{array}$$

$$\begin{array}{r} \text{D 15. } 8)9162830 \\ 1145278+6 \\ \hline \end{array}$$

the answer, the 7 in 27 ( $3 \times 9$ ) producing the second 7 in the answer. The explanation of D 14 is given by 8 into 68 = 8,  $8 \times 8 = 66$ , so 2 over, the 6 attracting. In D 15 the 2 is the attracting figure, and we have  $28 \div 8 = 2$ —6 over,  $8 \times 2 = 22$ . A similar error occurs in D 16, where

$$\begin{array}{r} \text{D 16. } 6)9287623 \\ 1513937+1 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D 17. } 9)1692 \dots \\ 198 \dots \\ \hline \end{array}$$

$$\begin{array}{r} \text{D 18. } 6) \dots 765 \\ \dots 790+5 \\ \hline \end{array}$$

we have  $6 \times 3 = 22$ . In D 17 we have a simple case of attraction, the 9 of the divisor with the 9 of the dividend producing a 9 in the quotient. D 18 is somewhat similar, the 6 of the divisor with the 6 in the dividend causing the error, the 4 of  $9 \times 6$  being replaced by 6. D 19 is a

$$\begin{array}{r} \text{D 19. } 6) \dots 765 \\ \dots 760+5 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D 20. } 7)2762904 \\ 334714+6 \\ \hline \end{array}$$

$$\begin{array}{r} \text{D 21. } 9)17683 \dots \\ 1994 \dots \\ \hline \end{array}$$

type which is common; the 4 suggests  $6 \times 7 = 44$ . With this should be compared the similar error in multiplication. In D 20 the 3 is the

source of error in the first place. In D 21 we have a case of inversion produced by attraction: 9 is the attracting figure which produces the inversion after the first 9 in the quotient.

*Addition.*—Errors in addition have been discussed. These came under the heads of Carrying, Omission, Inversion, and Attraction. A further examination of errors in the other operations is interesting and useful. Many of the errors arise apparently from a weak hold on the principles underlying the operations, but it is often difficult to decide if an error is due entirely to this or if some other cause has influenced the child.

*Subtraction.*—In subtraction the method of equal additions was adopted in school after a discussion on the matter. A common mistake arises in "paying back." Two cases are seen.

(a) "Paying back" where it is not needed, as in examples S 4—S 7.

S 4. 582	S 5. 8362	S 6. 1692 . . . .	S 7. 31802
347	4937	1289 . . . .	1574
<hr/>	<hr/>	<hr/>	<hr/>
135	3325	302 . . . .	29628

S 4 occurred in a test given to a young class; the error is at the end of the subtraction. In S 5 an added difficulty complicates matters for the child, namely, the "9-difficulty." S 6 and S 7 were tests given to older scholars. In S 6 the "9-difficulty" comes in, and the "1-difficulty" in S 7. These difficulties will be discussed below.

(b) Not "paying back" where there ought to be, as in examples S 8—S 10.

S 8. 3854	S 9. 5417	S 10. . . . 03
1982	3809	. . . . 76
<hr/>	<hr/>	<hr/>
1972	1518	. . . . 37

In S 8 the error occurs near the end of the sum, and the "9-difficulty" shows again. S 9 is a very common form of mistake in subtraction. S 10 has been discussed under Attraction. This is characteristic of most errors—one difficulty comes upon another and "the mischief is done." A peculiar type belonging to this class is exemplified in S 11—S 13. In S 11 there seems to have been a "paying-back" at the

S 11. . . . 004	S 12. 6803	S 13. 8260154
. . . . 076	2579	1690329
<hr/>	<hr/>	<hr/>
. . . . 027	4225	6570026

beginning. The neighbouring 7 and (1) 4 may have been an attraction. In S 12, S 13 1 seems to have been taken off the 9. An explanation of the complication in S 12 is given by  $13 - 9 = 4$  and 1 to make 9 up to 10, so 5; and so with S 13. This explanation may appear rather "strained," but the next type of error would seem to lend it probability.

"9-Difficulty."—The "9-difficulty" occurs frequently in subtraction. When a 9 occurs in the subtrahend a 0 may occur in the answer, as in examples S 14, S 15, with which may be compared S 16—S 18.

S 14. 653	S 15. 743	S 16. 7413	S 17. 1837 . . .	S 18. . . . 017
498	296	2984	1269 . . .	. . . . 768
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
105	407	4419	537 . . .	. . . . 39

Here evidently the working is "pay back and subtract from 10." The method of working is "make up tens and add the rest in." The cause of error is plain in such cases, and would seem to point to a similar explanation of error in the previous examples. Note in these cases there is something which attracts to mistake. In S 14 the 0 of the "made-up" 9 suggests 0 in the answer; in S 16 the 1 required to make up 10 and the 1 above suggests 1 in the answer; in S 17 the 3 required to make up 10 and the 3 above suggests 3 in the answer. The same explanation holds for S 18.

"0-Difficulty."—Somewhat similar to the above is the "0-difficulty," a case of which has been discussed (S 3). In S 19—S 21, the 0

S 19. .... 17	S 20. 5417	S 21. 600241
..... 09	3809	169028
..... 98	1518	431013

causing the difficulty appears in the lower line. S 20 is a common example of the error. In S 22, S 23, the 0's "above and below" help to produce the mistake.

S 22. 19200301	S 23. 8260154
16903724	1690329
2206577	6570026

**Multiplication.**—Three common types of errors in multiplication have been noted already, namely, errors due to wrong carrying, errors of inversion, and those to be explained by attraction. The errors of carrying and of inversion can be explained often by the fact that a disturbing factor such as attraction comes in to complicate matters for the child.

1. Carrying.—A type of carrying error is shown in examples M 22, M 23, where only 1 is carried whatever the figure may be which ought

M 22. 8369 ....	M 23. 9247 ....
7	7
5828 ....	64692 ....

to be carried. In M 22 we have  $3 \times 7 = 21$ , and 1 to carry gives 22. So in M 23;  $4 \times 7 = 28$ , and 1 to carry gives 29. These might be explained by attraction, for in M 22 the 8 might suggest  $3 \times 7 = 18$ , and in M 23 the 4 might suggest  $4 \times 7 = 24$ —explanations which are not altogether unlikely in the light of other mistakes.

2. Tables.—As is to be expected, a few errors seem to arise from weakness of tables, but in many of these, other causes enter to induce mistake. In M 24—M 27, the product "next above" the one required

M 24. 85	M 25. 359	M 26. ... 547	M 27. 6394 ...
4	3	7	3
360	1086	... 869	19274 ...

is taken. In M 24 we have  $8 \times 4 = 36$ , in M 25  $9 \times 3 = 36$ . One might hazard the guess that the class was working specially on the 4 table when the test was given. In M 26,  $4 \times 7$  gives 32; in M 27,  $9 \times 3 = 36$ , where the 4 next the 9 may have attracted to error. In M 28 we have

M 28. 748	4 $\times$ 9 = 32, where the answer one lower in the table
9	is taken instead of the correct product. Most of the
6692	errors in multiplication arise from the causes already
	touched upon—from attraction, inversion, and carrying,

the two latter often depending upon attraction. A few miscellaneous examples are interesting. In M 29 we have  $7 \times 9 = 72$  by attrac-

M 29. 587 M 30. 49 M 31. ... 70 M 32. 8207 ... M 33. .. 9058

$$\begin{array}{r} 9 \\ \hline 5247 \end{array} \quad \begin{array}{r} 9 \\ \hline 539 \end{array} \quad \begin{array}{r} 7 \\ \hline \dots 97 \end{array} \quad \begin{array}{r} 9 \\ \hline 74468 \end{array} \quad \begin{array}{r} 8 \\ \hline \dots 5264 \\ 46 \end{array}$$

tion, 7 the attracting figure, followed immediately by inversion, the 7 being put in the answer and the 2 carried. In M 30 the explanation seems to be  $9 \times 9 = 81 - 1$  is to go in the answer so one 9 goes, 9 being suggested by the 9 in the multiplier and in the multiplicand; the second error is  $4 \times 9 = 45$ . The 0 occasionally presents difficulty, which is shown in M 31—M 33. In each, attraction seems to play a part. The explanation of error in M 31 is obvious; in M 32 the 6 of 63 ( $7 \times 9$ ) is carried twice, so giving 4 instead of 8 in the answer; in M 33 the 4 to be carried, which was placed below the answer, has been multiplied by 8. M 34 shows error of the same kind as in M 32—the 4 from the

M 34. 9246375

M 35. 8372 ...

$$\begin{array}{r} 6 \\ \hline 54880250 \\ 248 \end{array}$$

$$\begin{array}{r} 3 \\ \hline 2481 \dots \end{array}$$

product  $7 \times 6$  has been carried twice; the mistake made at the end is  $6 + 2 = 8$ . The explanation of the mistake in M 35 is simple, and similar to that given for the second mistake in M 34—instead of  $3 \times 3$  we have  $3 + 3$ .

*Division.*—Common mistakes in division have been noted and classed as coming under one or other of the heads—carrying, inversion, attraction. Other examples under these heads are discussed below.

1. Attraction.—In D 22, the 1 over from the 7 is dropped, the

$$\begin{array}{r} \text{D 22. } 2 \overline{)769} \quad \text{D 23. } 7 \overline{)27629} \dots \quad \text{D 24. } 7 \overline{)2963} \dots \quad \text{D 25. } 9 \overline{)175784} \\ 324 + 1 \quad 38 \dots \quad 424 \dots \quad 1857948 \end{array}$$

cause of which may be the attraction of the 3. Again, in D 23, the 2 of 27 would seem to have suggested 2 to be taken from 7, leaving 5 over. In D 24, the 3 has attracted a 3. The 7 of 79 in D 25 attracts, and we have  $7 - 2$  in place of  $9 - 2$ . The 2, again, of the dividend in a later stage suggests  $70 - 62 = 8$ .

The following examples, D 26—D 28, may be explained either as due to a confusing of multiplication and division, or as arising from

$$\begin{array}{r} \text{D 26. } 2 \overline{)78} \quad \text{D 27. } 2 \overline{)359} \quad \text{D 28. } 2 \overline{)769} \quad \text{D 29. } 2 \overline{)687} \quad \text{D 30. } 2 \overline{)937} \\ 36 \quad 178 + 1 \quad 388 + 1 \quad 346 + 1 \quad 466 + 1 \end{array}$$

attraction. The 1 over would seem to indicate that the cause was attraction. This explanation appears to be confirmed by D 29, D 30, where confusion cannot explain the mistakes. D 31—D 34 exemplify

$$\begin{array}{r} \text{D 31. } 2 \overline{)359} \quad \text{D 32. } 7 \overline{)112} \dots \quad \text{D 33. } 5 \overline{)709} \quad \text{D 34. } 3 \overline{)539} \quad \text{D 35. } 2 \overline{)769} \\ 274 + 1 \quad 76 \dots \quad 5 \dots \quad 3 \dots \quad 188 + 4 \end{array}$$

another common type of error, where the divisor is put in the answer in place of 1. These may be compared with the preceding examples, as there are points of resemblance. D 35 would seem at a first glance to belong to this class, but while the other examples can be easily



explained by attraction, this mistake is rather in the nature of a pure slip—a chance inversion. It may be remarked that most of the mistakes in division can be explained by attraction.

"Number above."—A distinct type of mistake is shown in the following examples, where the next consecutive number above the required number appears in the answer. It shows in various forms. In

$$\begin{array}{r} \text{D 36. } 5 \overline{)184} \\ 37+1 \end{array} \quad \begin{array}{r} \text{D 37. } 7 \overline{) \dots 508} \\ \dots 364 \end{array} \quad \begin{array}{r} \text{D 38. } 9 \overline{)6129 \dots} \\ 347 \dots \end{array} \quad \begin{array}{r} \text{D 39. } 9 \overline{)6928 \dots} \\ 147 \dots \end{array}$$

D 36 we have 5 into 34=7 and 1 over: the number above 34 is taken, and we have 35+1 over. D 37 is another example of a similar error. A slight modification is seen in D 38. The working is as follows: 9 into 6 does not go, 3 required to make up 9, 3 is carried, then 9 into 31 goes three times and 4 over. The error is seen again in D 39, which shows plainly that it belongs to this class. The working is evidently almost similar; the only difference is that after the 9 is made up the quotient, 1, goes down, then matters proceed as before.

A variation of the error is seen in the next examples, the difference from the preceding appearing in the remainders. The next consecutive number above the right number appears as quotient, but the correct remainder is carried. Thus in D 40,

$$\begin{array}{r} \text{D 40.} \\ 7 \overline{)3596} \\ 514+5 \end{array} \quad \begin{array}{r} \text{D 41.} \\ 8 \overline{)4029} \\ 604-5 \end{array} \quad \begin{array}{r} \text{D 42.} \\ 9 \overline{)698347} \\ 77694+1 \end{array} \quad \begin{array}{r} \text{D 43.} \\ 4 \overline{)6925710} \\ 173143 \end{array}$$

there is 4 in the answer where there ought to be 3, but the correct remainder, 26-21=5, is given; so in D 41—D 43. In D 44,

$$\begin{array}{r} \text{D 44.} \\ 7 \overline{)2963508} \\ 424458+2 \end{array} \quad \begin{array}{r} \text{D 45.} \\ 6 \overline{)9287623} \\ 1549444+1 \end{array}$$

the mistake occurs twice, 4 appearing in the answer twice in succession instead of 3, with the correct remainder. In D 45, we have another variation of the error in the first mistake— $47 \div 6 = 9 + 2$  over ( $5 \times 9 = 45$ ); the second mistake in this sum is a form of inversion,  $22 \div 6 = 3 + 4$  over, 4 is put in the answer and 3 is carried, an error which may have been produced by attraction; and the last mistake is a complication— $23 \div 6$  (by attraction)= $4 + 1$  over, as in other examples of the type, helped it may be by attraction.

D 46. 5 occasionally presented a difficulty which may be due to attraction. In D 46, the child seems to have done the division as a whole, and not in parts. In D 47, the working seems to have been  $30 \div 5 = 5$  and one five over, so 1 to carry, a mistake similar to the 10 difficulty in subtraction.

Another frequent source of error is the "0 difficulty," two types of which are exemplified in D 48 and D 49. This is an

$$\begin{array}{r} \text{D 48.} \\ 6 \overline{)972845} \\ 16214.+5 \end{array} \quad \begin{array}{r} \text{D 49.} \\ 7 \overline{)162140} \\ 2316.+2 \end{array}$$

error which can be put right very easily by revival work on notation. In D 48, the 0 of the quotient is omitted; and in D 49, the 0 of the dividend may have helped towards error.

Some of the following miscellaneous examples can be classified, others it is difficult to class. In D 50, the 6 of <sup>6</sup>4 seems to have been

$$\begin{array}{r} \text{D 50.} \\ \text{6} \quad \text{10} \quad \text{7} \\ 9)67294 \, 5 \, 8 \\ \hline 747618 \end{array}$$

$$\begin{array}{r} \text{D 51.} \\ \text{8} \quad \text{5} \quad \text{4} \quad \text{7} \quad \text{7} \\ 9)1768305 \\ \hline 186467+5 \end{array}$$

$$\begin{array}{r} \text{D 52.} \\ \text{3} \quad \text{1} \quad \text{4} \\ 6)150963 \\ \hline 25227+1 \end{array}$$

$$\begin{array}{r} \text{D 53.} \\ \text{1} \quad \text{5} \quad \text{1} \quad \text{5} \\ 4)69257 \, 1 \, 0 \\ \hline 17312927+6 \end{array}$$

an attracting figure, and we have 6 in the quotient, then—confusion. The other examples are difficult of explanation, and can scarcely be placed in any class. D 51 seems to be an example of attraction in the first part, 8 being the attracting figure; in the second, 6 ( $70 \div 9$  63). In D 52 and D 53, we have one-place errors—a lapse at one place.

Most errors can be explained more or less easily, and placed in classes. This, the last example, we should like to see explained.

$$\begin{array}{r} \text{D 54.} \\ \text{6} \quad \text{7} \quad \text{9} \quad \text{1} \quad \text{8} \\ 4)2762904 \\ \hline 389915+4 \end{array}$$

Fortunately, such examples are rare, and on that account are interesting as curiosities, and as signs that such a discussion as the above may have some value for schoolroom practice.

*Prediction of Errors.*—It has been suggested to test the value of “attractions” in predicting errors. The difficulties of the test are immediately apparent. There are many forms in which “attractions” may lead to error, and while several may be noted, others may escape notice. The test, however, was applied. In the first case, a paper was set in which the sum  $\frac{589}{8}$  occurred, a possible answer to which was noted— $177+2$ —the 7 of  $\frac{28}{3}$  and the 7 of 27 suggesting a 7 in the quotient. Out of the seven wrong answers, one was that noted. In another test, set by the class teacher, the sums were analyzed for possible mistakes. In the multiplication  $9862 \times 7$ , a possible attracting figure was 4, thus the 4 of 14 and the 4 of 42 might lead to the error  $6 \times 7 = 44$ . Out of four wrong answers, one was of the kind noted as probable, the actual answer being 69054. In this same test, of the ten wrong answers in division, seven could be classed as due to attraction. A suggestive form of “prediction” is shown in another. The multiplication and division sums of the test were  $9678 \times 6$  and  $4143 \div 6$ . As there were no probable errors from attraction, the test was considered easy. A possible error (but unlikely) in multiplication was 59068. The result of the test was

Number wrong in multiplication—0

Number wrong in division—1

and this was a case of inversion,  $4143 \div 6 = 240 + 6 \frac{41}{2+2}$ . In another

test, the sums given were  $7508 \times 7$  :  $6903 \div 6$  : probable mistakes in multiplication, as (1) 53056 or (2) 48556. The three wrong answers were (1) 53056, (2)  $5 \times 7 = 42$ , (3) Inability. In division, possible answers were noted as (1)  $958-5$ , (2)  $967-1$ . The actual wrong answers were (1)  $967-1$ , (2)  $983-2$ , (3) and (4) due to inability.

#### NOTES ON TYPES OF ERROR.

*Inversion.*—An imperfect grip of notation may account for the errors. This may be the cause in some cases, but plainly not in all. The error occurs in the work of older scholars who have a sound hold

of notation. Again, while the children are working they are not thinking of local values; nor can the explanation account for the mistake, seen in the example T., which was made by a teacher.

T.	168	The correct addition of the units gives 31 as answer; in
	138	the example we have a case of inversion. Attraction
	86	may have been at the root of the matter, as the method
	<u>219</u>	of working was $8 \times 3 +$ , and so 3 may have attracted, the
	<u>593</u>	attraction helped by weakened attention to the matter
		in hand.

*Attraction.*—Is this due to mental inertia? a mental slowness to move or to change. The error occurs most frequently in the work of children who are slow either naturally or because of unfamiliarity with method; and this would seem to lend force to the suggestion as to the cause. Some help may be got in the attack on this error from the fact that where the mistake occurs in the work of adults it arises from want of attention. Such a mistake is seen in reading 9)9854 for 9)5854.

It has been suggested that the error is due to persistence of memory; but while this may be a necessary condition for the mistake, it is not sufficient to account for it. In addition to persistence of memory, there must be a break in attention to allow of persistence affecting the result. In the case of the adult, full attention is not given to the point immediately under notice, and a mistake easily results; the child has not power to retain one thing in the focus of attention, and another ready to be used—the child can hold only one thing at a time “with surety.” Inversion and attraction would thus seem to arise from the same cause—inversion depending upon the child’s inability to deal with two or more numbers at the same time—to use one and hold the other ready for use.

*Carrying* errors can be explained by this same inability to retain figures for “immediate future” use.

“9-difficulty.”—A similar explanation accounts for the “9-difficulty” in subtraction. While the child is dealing with the difficulty of making up the 10, he misses the other difficulty of building up and subtracting. Errors arising from this cause occur in reading, spelling, and dictation.

“*Paying back.*”—Where “paying back” occurs in subtraction at the beginning, where there is no need for it, it would seem to indicate that the principle of working was not understood. This is a possible explanation, but another suggests itself. In the process of learning to work mechanically in arithmetic, there are three distinct stages: 1st, work on the principles underlying the operation; 2nd, an intermediate stage; 3rd, a stage when the work is thoroughly known and entirely mechanical. The first stage requires simple examples to illustrate the method—and many of them. At the intermediate stage the child understands the principle, and the work is largely mechanical, but the reasons for the method are “floating hazily about” in the mind. Many of the scholars whose work was examined are just at the intermediate stage, and the errors may be accounted for in this way. The first explanation does not account for mistakes made by scholars well up in their work.

The class teacher may ask how such a discussion is to help school-room practice. Even such a slight examination of the types gives suggestion and help. The point immediately emerges that every slight disturbance or difficulty may cause the child to make mistakes at the



initial stages, hence the necessity for simple work, but plenty of it, and no advance to new work while old is imperfectly known. This raises the question of progress. If a simple method could be devised to enable the class teacher to gauge the position of the class, it would be of great advantage. Another very interesting point is raised. The exact functions of arithmetic in the elementary schools—is a matter of debate. There are those who hold it is taught mainly as a utility subject, and say that drill is of first importance; others, again, maintain that the purpose of elementary arithmetic is to supply the training which mathematics gives in the upper school, and that heavy, mechanical work is of little value. May not this mechanical drill, properly used, supply that essential element required in mathematics, and got from mathematics—a training to attend and to sustain attention?

## LEARNING TO LIVE AND LIVING BY LEARNING.

By HENRY WILSON, President of the Arts and Crafts Society.

(An Address delivered to the Training College Association.)

THERE can be few among us who have not asked, What have we done to bring this immense disaster upon ourselves? Fewer still who do not recognize that each is in some degree responsible. Our system of Education, in common with other defective organizations, shares in the blame, though teachers ever labour under grave disabilities. Teachers, artists, thinkers, all are regarded in England with a certain contempt, as useful but not important members of society.

The truth is, however, that just as the healthy growth of the body depends on the activity of certain glands, so on the healthy activity of teachers, artists, and philosophers depends the health of the body politic. To that body, now in the grip of war, it is ours to bring, or to seek to bring, soundness and healing.

The situation has been long foreseen. Ruskin, Tolstoy, Carlyle, Morris, Mazzini, and many others have told us what to expect; but the world of politics called them dreamers, impractical idealists.

Now, instead of living learning, we have schemes of education, modes of existence, and mental habits, divorced from healthy productive life. We have not been learning how to live. Having carefully barred the main avenues to expression, foiled their instincts of creation, we see the youth of the world charging in one magnificent, terrific impulse, a living cataract, through the one gate of expression left open to them—the gate of death. There at least may they find work for their eager souls.

For us who perforce remain, the only life must be the creative life. We must repair the ravages of destruction. The moral being becomes perverted, distorted, diseased, in proportion as we are removed from that life.

Up the stair of production humanity has climbed, to see his fairest handiwork annihilated by high explosives and German love.



(See the *Munchener Neueste Nachrichten*, Jan. 1st.) This evil of inharmonious discreative life is so widespread that its destructive effects must have been aided by universally-favourable conditions among the peoples of the Western world. Some of those conditions are:—

- (1) Mutual ignorance of each other's qualities.
- (2) The secret labours of the panic and suspicion-mongers called diplomatists.
- (3) The non-morality of our whole economic system.
- (4) The artificiality of almost all education.

The first three are largely implicit in the last.

What is education, none can say. All can say what it is not. For each, the family, the school, occupation, the world, are successive materials within which growth takes place. Death is birth to wider knowledge.

Learning, instruction, training, have so long been considered synonymous that education has become too exclusively aural. Many attempts, however, have been made to remedy this now obvious effect. Culture has been considered too much under its literary aspect, yet the means by which essential culture can be attained are as numerous as the activities of life. All cultures, all civilizations have their roots in those activities. For instance, the commercial activity of any town has its roots directly in the primitive occupations of rimer, hunter, trapper, shepherd, fisher, and housewife. All learning, all the arts and sciences, all philosophies and religions, are by-products of those fundamental activities. It is the fertilizing contact with these activities we so greatly need at the present time, not only for education, but for the regeneration of national life.

What is the meaning of this cry for skilled labour if it be not the tacit condemnation of our whole economic and educational system? We have made not creators but consumers. Our national life has been too exclusively destructive. In other words, we have neglected the teaching possibilities of actual life. We have not been learning by living. Every occupation, even the humblest, rightly pursued, is a gate into the infinite.

Consider what a wonderful school could be made of a well-conducted farm. There is scarce a department of human knowledge which is not drawn upon in the course of the year. Geology, botany, bacteriology, engineering, embryology, and a score of others, all must be studied from the life, and the knowledge gained applied at once in practice.

I mention agriculture because we shall shortly be faced by an agricultural crisis of the first magnitude. Yet agriculture is the very basis of national life. Here is an opportunity. Why not establish schools of agriculture, turn our elementary schools in the country into schools of country livelihood; reorganize and revitalize rural existence; bring life, interest, joy, to the desolate and squalid villages of England! The teachers should be local experts; the reorganization of the farm buildings—the extension, repair, and upkeep—would be done by the pupils.

In the Little Commonwealth these things are done with amazing success by delinquent children, who win health, self-respect, and morality in the process. Must our children become delinquent before they enjoy such priceless advantages?

Yet we need not farming schools alone, but schools of building, engineering, smelting, metallurgy, shipbuilding, hydraulics, forestry, farriery, dyeing, weaving, fishery, and a score of other crafts, all needing men, life, and energy. Each school should do real work for the community or township in which it exists. They should all be directed by men trained in and living by their respective crafts.

It is in this direction alone—the reorganization of education, art, and industry—that our future safety can be found. Our very existence depends, not on organized attempts to capture German trade, or tariffs, or on improved armaments, but on our success in reforming ourselves while there is yet time.

We rejoice in immunity from invasion. There is no need of invasion by armed foe. The real invasion, occupation, and exploitation are accomplished facts, accomplished while politicians slept and business men dreamed of huge profits and merry week-ends.

Meanwhile, wide-eyed, discreet, tireless, insinuating Teutons have garnered our neglected intellectual and artistic harvests, and diligently stored and cultivated all our germinal ideas for the last forty years. They have benefited. Justly so. Such things were not meant to be wasted. Those who have seen their value deserve all they have won by that knowledge.

But now that eighteen months of war have at last brought this real, living Germany to the attention of our statesmen, and they have decided that something must be done, let it be our task as educationists to see that the right things are done. Let us have nothing to do with reprisals, cut-throat competition, trade wars, boycotts. None of these are worthy or even efficient means of victory. Only a new national ethics, only live education, the encouragement of creative industry, artistic expression, the revitalizing of country life, can do anything towards that victory. If we drop back into the old ways, if the Education Department is still to strangle all vitality and initiation in our schools, then the old disasters will fall on us again.

You cannot stop individual effort. Artists will work, teachers will discover and inspire, thinkers will invent, and Germany or America, as before, will reap the harvest our governors neglect. Our rivals' best weapons against us are the brains of the men we persistently neglect.

To try and capture markets, then run machines till those markets are glutted, while at home skilled hands and fertile minds lack proper employment, is not merely to grasp at the shadow and lose the substance, it is to make the grasp of reality impossible.

A man's value to his kind depends not on his so-called wealth, but in the amount of germinal ideas he has available for instant use; in the vitality, intensity, and nobility of his ideals. Only ideals have any intrinsic value, and we can measure their worth by the lives they produce. Of these the noblest, as well as the one most necessary at the present moment, is service—the service of humanity under denied compulsion. None other should ever be spoken of in such a country as our own.

## NORMS OF PERFORMANCE IN THE FUNDAMENTAL PROCESSES OF ARITHMETIC.

By P. L. GRAY.

In the parts of this Journal for December, 1914, and March, 1915 (Vol. 2, No. 6, and Vol. 3, No. 1), Dr. Ballard gave and discussed the results of a test in Arithmetic worked in some Elementary Schools in London. He suggested that his norms thus obtained might be made "the basis of a comparison between the proficiency of London children and that of children" in other places. Acting upon this suggestion the identical questions were set to a number of schools in Leeds—schools chosen to include all grades and types; 3,645 boys and 3,715 girls worked the tests: that is, about 11 per cent of the number in average attendance in the city.

*The tests and mode of procedure.*—The tests are given in full in Dr. Ballard's paper; it will be sufficient here to quote examples:—

In Addition, 16 sums of this type	...	...	296
			845
			379
			656

In Subtraction, 24 sums of this type	...	...	5601
			3729

In Multiplication, 28 sums of this type	...	...	694
			4

In Division, 24 sums of this type	...	...	4) 2293
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The scores obtainable were:—

In Addition	...	...	for each sum, 3; total 48
In Subtraction	...	"	"
In Multiplication	...	"	"
In Division	...	"	"

For details as to method of marking, &c., reference should be made to Dr. Ballard's articles.

The exercises were printed for each child on a sheet with four pages, so that those in Addition occupied the whole of the first page, the Subtraction the second, and so on. All the schools worked the papers on the same day.

As the general leaving-age in Leeds is 13, the last age-group is 13-13½ years; the group is comparatively small, and gives less trustworthy results than those of the other groups.

It may be noted that all "averages" in the tables are *real* averages, and are not obtained by "taking the average of the several school averages," but probably any differences thus involved are negligible.

TABLE 1.—NORMS OF PERFORMANCE. 5 MINUTES WORK.

Age Group.	Average Marks.						Percentage of children who finished before time.						ERRORS.						No. of Children.					
	+		—		×		—		×		÷		+		—		×				÷			
	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.				
8 — 8½	11	11	17	16	13	13	8	7							2·3	2·1	7·4	6·0	5·0	4·4	6·7	4·5	289	286
8½ — 9	15	14	25	23	22	19	12	10															313	338
9 — 9½	17	17	30	31	27	27	16	14							1·4	1·3	3·3	3·4	3·0	2·6	3·3	3·0	360	345
9½ — 10	20	18	36	35	34	32	20	18	2	1	2												346	350
10 — 10½	22	19	42	38	39	35	23	20	2	1	2	1			1·2	0·9	2·7	2·5	2·5	2·4	2·6	2·5	383	387
10½ — 11	24	23	46	45	44	43	28	24	2	1	3	1	2										371	355
11 — 11½	27	23	51	48	48	44	32	27	3	2	6	3	1		1·2	0·8	3·1	2·0	2·4	2·2	2·5	1·8	403	398
11½ — 12	29	25	52	51	51	48	35	30	5	2	7	6	5	1									340	400
12 — 12½	28	27	54	55	53	52	36	32	6	3	8	5	6	2	1·2	1·0	2·6	1·9	2·2	1·7	2·4	1·9	398	404
12½ — 13	30	29	59	57	56	53	40	35	10	7	14	10	7	3									354	342
13 — 13½	30	30	59	61	62	57	41	37	13	8	23	17	9	4	1·4	1·3	1·8	2·9	1·9	2·1	1·9	2·3	88	106

B.=boys. G.=girls.



TABLE 2.—NORMS OF PERFORMANCE. 10 MINUTES WORK.

Age Group.	Average Marks.								Percentage of children who finished before time.								ERRORS.								No. of Children.	
	+		—		×		÷		+		—		×		÷		+		—		×		÷			
	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.
8 — 8½	20	24	31	31	25	24	13	12	6	3	3	1	3	1	0	5.1	4.0	15.5	12.5	9.7	9.0	13.4	9.8	289	286	
8½ — 9	28	26	49	45	39	35	22	18	13	11	7	4	8	4	1	0							313	338		
9 — 9½	31	33	55	58	47	49	28	26	21	18	13	9	18	15	7	2	2.7	2.2	6.4	7.2	5.5	5.8	6.3	360	345	
9½ — 10	34	34	64	64	58	56	35	33	31	21	24	17	34	26	12	5							346	350		
10 — 10½	38	35	71	69	63	60	41	36	41	29	31	26	45	32	17	8	2.4	2.0	5.5	5.0	4.8	4.4	5.5	5.0	383	387
10½ — 11	39	39	77	76	70	68	45	44	53	43	44	40	56	49	27	16							371	355		
11 — 11½	42	39	82	79	73	69	52	45	67	45	56	48	58	56	35	18	2.1	1.7	5.5	3.5	4.0	4.0	4.7	4.0	403	398
11½ — 12	43	40	81	82	75	73	54	52	71	55	62	55	76	65	43	32							340	400		
12 — 12½	43	43	83	86	75	76	55	54	71	70	66	65	79	71	48	63	2.1	1.8	5.1	3.5	3.8	3.2	4.5	4.0	398	404
12½ — 13	44	43	86	86	76	76	58	56	81	72	75	67	80	74	62	45							354	342		
13 — 13½	44	44	86	88	79	78	60	59	79	73	72	84	86	83	63	53	2.1	2.0	3.7	4.1	3.1	3.2	3.6	4.3	88	106

TABLE 3.—NORMS OF PERFORMANCE. 15 MINUTES WORK.

Age Group.	Marks.								Percentage of children who finished before time.								ERRORS.						No. of Children.			
	+		—		×		÷		+		—		×		÷											
	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.								
8 — 8½	27	29	44	44	34	34	19	18	32	36	29	28	21	17	14	7	7.8	6.5	22.8	19.8	15.5	14.7	19.0	16.1	289	286
8½ — 9	39	36	64	63	50	47	31	26	52	46	47	33	38	25	16	6								313	338	
9 — 9½	38	41	71	76	58	62	37	37	62	63	52	58	49	47	27	16	4.0	4.1	10.6	11.4	8.8	10.6	10.1	12.3	360	345
9½ — 10	41	42	76	80	68	66	46	41	74	75	76	73	70	63	41	28								346	350	
10 — 10½	43	43	83	83	73	70	51	46	82	80	82	78	80	71	53	31	3.1	3.0	7.5	7.6	6.6	6.7	8.4	9.5	383	387
10½ — 11	44	44	85	87	75	75	57	55	86	85	86	85	82	84	66	52								371	355	
11 — 11½	45	45	89	89	78	76	60	56	95	91	94	91	91	87	73	59	2.5	2.2	6.5	5.0	5.1	5.1	6.5	7.0	403	398
11½ — 12	45	45	87	90	78	79	61	60	96	93	95	91	96	91	80	71								340	400	
12 — 12½	45	45	88	92	78	80	63	63	93	98	96	98	96	95	83	77	2.4	2.1	6.3	4.4	4.3	3.7	6.0	5.8	398	404
12½ — 13	45	46	91	92	79	80	64	63	98	96	98	97	98	96	87	82								354	342	
13 — 13½	45	46	91	92	81	80	65	65	94	100	94	96	95	98	86	85	2.5	2.1	4.4	4.6	3.4	3.7	4.3	5.7	88	106

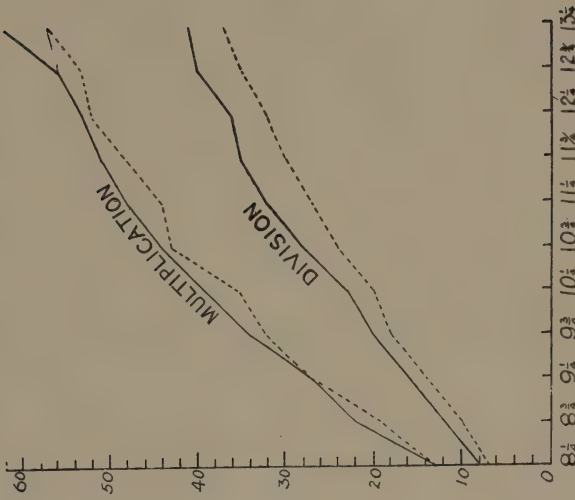


CHART II.

Boys..... Girls.....

Average Scores in 5 minutes.

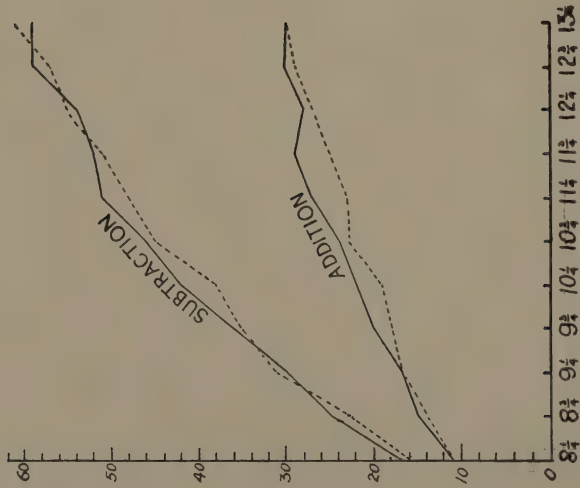


CHART I.

Boys..... Girls.....

Average Scores in 5 minutes.

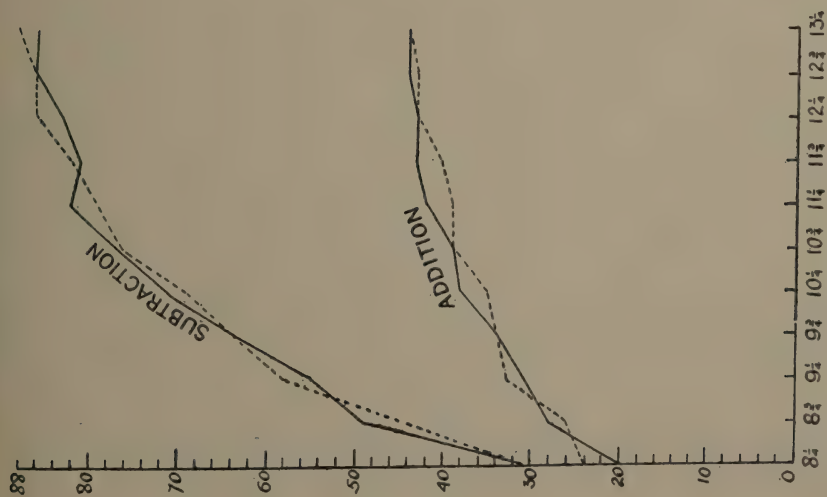


CHART III.

Boys..... Girls.....  
Average Scores in 10 minutes.

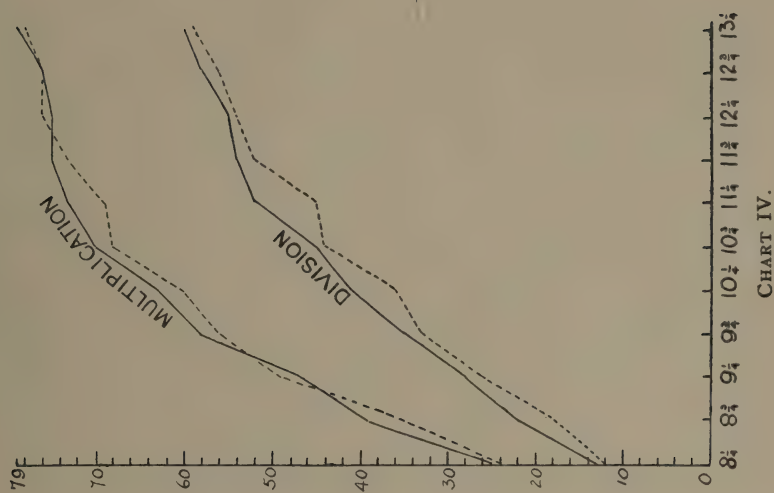


CHART IV.

Boys..... Girls.....  
Average Scores in 10 minutes.



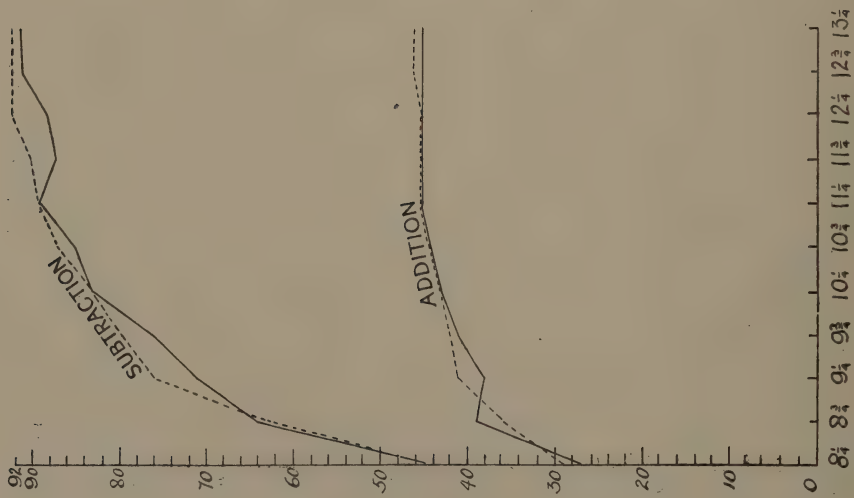


CHART V.

Boys..... Girls.....  
Average Scores in 15 minutes.

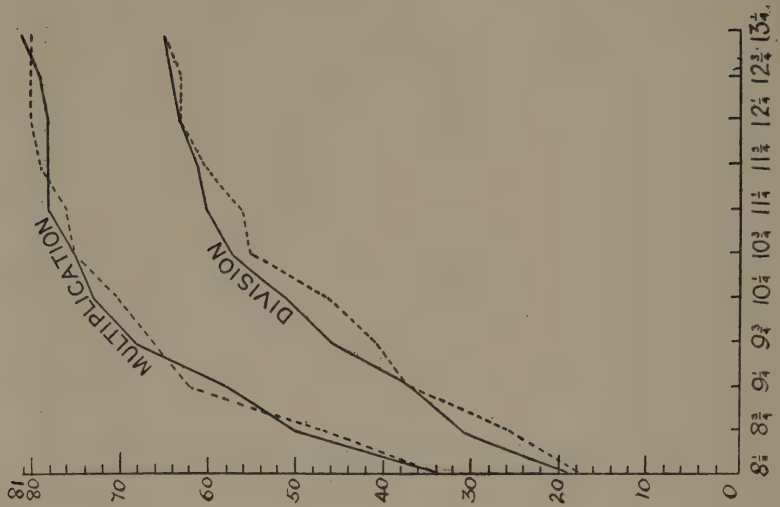


CHART VI.

Boys..... Girls.....  
Average Scores in 15 minutes.

The conditions differed from those in the London test in one respect—in London only five minutes were given to each set of exercises: in Leeds, for various reasons, the children were allowed *fifteen* minutes on each set. In both cases, five minutes interval for rest was given between one paper and the following.<sup>1</sup> The papers were marked in such a way at the end of five minutes work, and again at the end of ten minutes, that the scores and errors belonging to each of the periods—5, 10 and 15 minutes—could be counted. This increase in the working-time doubtless had some corresponding effect in the production of mental fatigue, and to a slight extent vitiates the absolute comparability of the results in the two towns, but it leaves the “five minutes Addition” exactly comparable, and probably makes little difference in the rest of the work. Any difference due to this cause would show to the apparent disadvantage of the Leeds children.

*The results.*—The summarized results are given in Tables 1, 2, and 3, and Charts 1 to 6. The Charts are simply graphic versions of the “average marks” columns in the Tables. In both Tables and Charts the figures for boys and girls are shown separately; many interesting points emerge from a comparison of the two sets. For example, in five minutes work the girls are slightly inferior to the boys in their scores in everything but Subtraction; they improve their position in ten minutes work, and in fifteen minutes they are inferior in Division only. From the columns “Percentage of children who finished before time” it is clear that the girls “warmed up” to their work more slowly than the boys, so that in the first five minutes the boys had the advantage, but in the whole fifteen minutes the girls largely redressed the difference, except in Division; perhaps they suffered more than the boys from the mental fatigue produced by the preceding strenuous forty-five minutes work.

On the whole, the Leeds results show a very striking likeness to those obtained in London in the “five minutes” scores; in Subtraction they are slightly better; in Division, where the effects of fatigue among the Leeds children would be most evident, the difference is only one or two marks, except in the lowest age-groups.

But one distinct difference between the two places appears in “Errors.” In Dr. Ballard’s test it was “a curious fact that the average number of errors is virtually the same for each age-group,” so that he gives only one figure for all age-groups for each of the four sets of sums. His figures are:—

	Addition.	Subtraction.	Multiplication.	Division.
Errors ...	2½	6	4½	4

In the Leeds results it is impossible to summarize the number of errors in this way; on the whole, they distinctly diminish as the children get older. Thus, taking for example Multiplication, the figures in Table 1 are:—

Age-group ...	8½	9½	10½	11½	12½	13½
Errors ... Boys	5·0	3·0	2·5	2·4	2·2	1·9
„ ... Girls	4·4	2·6	2·4	2·2	1·7	2·1

and in the Addition, &c., the progression in accuracy is almost equally steady.

<sup>1</sup>The fifteen minutes work on each paper was continuous; the five minutes rest came only at the end of each fifteen minutes, so that the whole time occupied by the test was 1½ hours—that is, four quarters of an hour work, with three rest-periods of five minutes each. The children put a x on their papers at the point reached when the teacher gave the word at the expiration of five minutes, and again at ten minutes.

The Subtraction results in Leeds are worth noting in connexion with a remark by Dr. Ballard: the majority of schools in Leeds teach this rule by the method of "equal addition," and the results quite confirm Dr. Ballard's claim for the superiority of this method over that of "decomposition." With the general conclusions of his paper I heartily agree, especially with his recommendations of "at least one pure practice lesson per week," and that "speed as well as accuracy be aimed at in the practice lesson."

My warm thanks are due to the Head Teachers and staffs of the schools in which the test-papers were worked, both for their cordiality in welcoming the test, and for the labour involved in marking the results in their respective schools; also to the officials of the Local Education Authority for their hearty co-operation. The collation of the figures from the two dozen individual Departments was largely done at the Education Offices with the help of a clerk and a calculating machine, which saved much time and minimized chances of numerical errors.

### NORMAL PERFORMANCES IN FUNDAMENTAL ARITHMETICAL PROCESSES.

By J. A. GREEN, M.A.

DR. BALLARD'S interesting inquiry into normal performances in the fundamental processes of Arithmetic has roused a good deal of interest, and it may be hoped that comparative studies from other districts like that of Mr. Gray's in this number of the Journal may be forthcoming.

It is perhaps worth while, however, to consider one or two points of method in connexion therewith. In the first place, Dr. Ballard's examples were not sufficient to occupy all the children during the whole of the five minutes allowed. His returns, therefore, always show a number of children who have "finished before time." It is unfortunate, I think, that an incommensurable of this type should have been introduced into an exercise which was to be used for comparative purposes. Some children finish in three minutes, some in four, and some only just on time. The children who have completed the paper ten seconds before the signal for stopping is given, rank equal with those who finished two minutes earlier. We do not know what the quickest boys might accomplish if they were given the opportunity. The possible performance of the class as a whole is depressed, and a real measure of average capacity is not obtained.

In the next place, one notes that all the subtraction examples are uniform in acquiring a "carrying process" in all possible cases. Normal subtraction, of course, does not present that feature. In Dr. Ballard's test the habit of "carrying" fixes itself. It is done, that is to say, without reflection. If the examples were mixed in this respect it is probable either that the number of errors would increase or that the number done would diminish. The act of discrimination takes time.

Again, in regard to the subtraction, Dr. Ballard's selection of examples does not distribute the possible different cases evenly. In the answers, for example, there are 62 digits out of 96 equal to or greater than 5. Thus 9 occurs 15 times, and 6 occurs 14 times. Again, if we

exclude the left hand figures (thousands columns), there are 72 processes in which numbers varying from 1 to 10 are subtracted from numbers varying from 10 to 18. Cases like 3 from 13 are, of course, excluded (though 10 from 10 occurs twice), and, taking this into account, the examples provide 64 subtractions of numbers between 1 and 10 from numbers between 10 and 18. Of these 64 cases, twelve are subtractions from 10, fifteen from 11, and twelve from 12. We note as particular examples that the following do not occur at all: 7 from 10, 8 from 16, 9 from 17, and 8 from 12, also that 7 from 13 occurs only once, whereas 8 from 13 appears three times, 7 from 15 comes once only, 6 from 15 three times, 9 from 11 and 9 from 12 each occur twice, 9 from 13, 14, 15, 16 respectively once each.

This rather irregular distribution would not matter if all subtractions within these limits were equally easy, though it should be said that unless a child works through all the examples he will in any case not meet with a completely regular distribution. Yet from the point of view of determining a normal performance it does seem desirable to present a test which takes all possibilities into account. This is all the more important if we are to provide a test which can be easily altered without changing its essential character, and so can be used over and over again with the same children. In the case of the Multiplication and Division test this criticism does not apply, as the importance of distribution has obviously been kept in mind. The Addition I have not examined in such detail, though here again the distribution seems more satisfactory than in the subtraction.

Granted a satisfactory set of examples numerous enough to occupy all the children the whole of the time, we may ask what is the value of the inquiry. Dr. Ballard has used it in the first place to determine the relative value of two leading methods in subtraction, and in the second place he has suggested various possible uses to which the table of norms may be put. Amongst these, he suggests its use by head masters and class teachers as a means of discovering whether the class is above or below the average in their powers of computation.

It is this particular use of the table which I venture to doubt. These norms or averages have the drawbacks common to all such calculations. Like the average child, the norm represents nothing actual, and a teacher or a head master might deceive himself seriously by setting his class averages alongside these gross calculations. The average marks obtained by his class is a very imperfect picture of what the condition of things really is. Half the class might be extremely weak, and the average may hide the fact. As a practical teacher he is interested not in the average skill of his class but in the distribution of that skill amongst his pupils. He wants to know not merely the average, but the range of deviation from that average which may be expected. Until he has both figures worked out he cannot fairly compare his pupils with those elsewhere.

Again, from the standpoint of a particular class or school, what is to be regarded as a normal performance? Is it the average obtained from single efforts in a hundred other schools, or the average of a number of separate tests applied to a single school? How far can a solitary performance at a single school be taken as a normal one? Does it make any difference what part of the day or what day of the week has been used for the test? All these variables *may* cancel each other out when many thousands of children are tested, but this cancelling out is



assumed, and in any case the result of cancelling out is the production of an abstraction which needs very careful use for comparative purposes unless the comparison is on a similar wholesale scale. To apply the table of norms to single schools or classes as it stands is surely mistaken. How much more so would be its application to the case of a solitary new boy whose classification was being considered!

Another obvious difficulty comes through the fact that a teacher's class contains children of various ages. If he is thinking of his own pupils, the averages of the different age groups will be based on very small numbers with, it may be, very wide variations. And if the head master of a mixed school of 300 divides his pupils into age groups according to sex, the average size of his groups will be fifteen only, and some will be much smaller. His results *may* differ considerably from the averages given by Dr. Ballard without any indication of serious mischief or even of marked excellence.

The latter point raises another question of some interest and importance to the teacher and to the community. Averages hide the best performances as well as the worst. When is a teacher justified in thinking he has an exceptionally gifted pupil? Is it not, perhaps, more important that he should know how his pupils compare with the best than how they compare with the average? It is not in the communal interest that a teacher's work should aim at an average performance, nor, we may be quite sure, is such an ambition the expression of the desire of the profession itself. That the snare of undesirable competition lurks behind a suggestion of this kind may be true, and the anonymity of averages is a commendable feature. But what is good may be as anonymous as an average, and, used by the teacher himself, a measure of an actual good could hardly fail to be more stimulating than a bare average.

It seemed in any case desirable to illustrate the relation of Dr. Ballard's "Norms" to the work of individual schools. For this purpose two schools in the provinces took the tests, which were, however, modified in the following details:

- (1) The number of examples was increased to a point which it was estimated would occupy all the children for the full period. Dr. Ballard's examples were used (except in Subtraction) but their number was increased.
- (2) The Subtraction series was reformed in order (a) to provide a better distribution of the possible processes, and (b) to introduce a small number of cases in which no "carrying" was involved.

The tables below give the results. In order to give a complete picture of the position of each age group, the standard deviation from the average is given and in order to show the wide range within which the results fall, the highest and lowest mark in each group is given. The median for each group is also given, in order to illustrate the relation between the median and the average.\* It is so near to the average in most cases that for purposes of this kind it might be used instead, thereby saving a great deal of tiresome labour.

In the tables the figures of the two schools are placed side by side. Those in the left hand column of the respective age groups belong to School A, and those in the right hand column to School B. In order to avoid comparisons of the wrong kind, it should be stated that the figures

\* The median is the mark obtained by the middle girl or boy in the group. If there were 35 in the group, and these were arranged in order of merit, the mark of the eighteenth child is the median mark. When the number in the group is even, the mean of the marks of the two pupils on each side of the middle position is given.

of School B are from a *second* performance of a precisely similar test. School A took the same test as School B, but School B had worked an earlier one of the same kind.

The figures should be compared with the five minutes performances recorded by Dr. Ballard (Dec., 1914) and by Mr. Gray in this issue of the Journal, keeping in mind the differences involved in the changes already described.

Within the tables themselves perhaps the most striking feature is the high deviation, considered, of course, in relation to the performance of each class as a whole. Is this usual? What is the normal standard deviation? At what point should we regard the standard deviation of a particular class or school as a mark of defective teaching? Of course, the nature of the test will affect this figure. When the deviation approaches the figures of the average performance itself we may assume that the test has been too difficult. This occurs with the division test in the lower age groups in these tables. Through a printer's error the division test began with the higher numbers as divisors. If the first examples had had 2, 3, 4 as divisors, the results would have been better and the standard deviation lower. It would, of course, be quite easy to give the numbers who had finished before time in the sense of having done the amount of work in Dr. Ballard's original test within the five minutes allowed, but, for reasons already laid down, they are omitted as being really incomparable quantities.

Table I.—ADDITION.

Ages.		8½	8¾	9¼	9¾	10½	10¾	11½	11¾	12½	12¾	13½	13¾											
No. of Boys .....				7	8	13	19	10	21	12	35	12	44	16	26	12	31	18	13	11	17			
No. of Girls.....		14	25	31	8	33	10	27	10	30	15	43	16	39	10	40	10	23	15	17				
Aver. Mark	B.			18	16	21	37	24	34	25	43	32	39	33	45	31	45	29	44	33	45			
	G.	22	18		27	25	32	29	33	33	36	35	37	32	44	37	45	34	38	37	45	40	47	
Stand. Devn.	B.			6.1	4.6	12.6	11.3	11.8	10.5	7.3	18.10	1.15	3.6	1.16	6.9	8.12	5.14	3.11	9.15	5.11				
	G.	4.0	7.2		10.1	10	10.1	10	8.8	9.8	14.7	9.1	13.9	10.6	15.0	8.0	13.2	14.5	10.8	13	12.5	11.3	16	
Highest Mark	B.			27	26	54	62	52	60	34	88	48	90	54	61	57	74	54	70	45	67			
	G.	33	40		53	44	56	40	51	54	90	48	62	51	78	52	87	81	67	68	70	58	84	
Lowest Mark	B.			8	9	5	9	10	13	14	12	11	12	23	10	17	19	6	23	17	25			
	G.	11	8		9	10	11	11	15	6	7	17	16	17	21	22	18	19	19	23	27	19	24	
Median .....		B.		18	16	18	39	22	34	22	39	27	36	30	41	27	44	30	41	25	43			
" .....		G.	23	18		26	25	31	31	32	34	35	34	39	37	40	36	40	39	39	35	45	42	43
Aver. Error	B.			2	1.6	1.9	1.7	1.9	1.9	3	.8	4.1	5	2.6	1.4	2	2.1	2.4	2.7	2.9				
	G.	1.5	4.2		2.2	1	1.3	1.4	1.8	2.2	1.3	4	2.6	1.3	2.1	1.9	1.8	1.1	1.6	2.5	1.9	1.9	1.9	

Table II.—SUBTRACTION.

Ages.		8½	8½	9½	9½	10½	10½	11½	11½	12½	12½	13½	13½										
No. of Boys .....				7	8	13	19	10	21	13	35	12	44	16	26	11	31	18	13	11	17		
No. of Girls.....		14	25	31	8	33	10	27	10	30	10	40	17	43	16	39	10	40	10	23	15	17	
Aver. } Mark }	B.			17	20	34	65	29	61	40	77	51	67	59	80	58	84	48	76	64	78		
	G.	25	22	32	42	48	55	55	61	61	61	67	55	65	59	69	59	67	57	83	69	85	
Stand. } Devn. }	B.			12.0	11.0	19.2	20.6	12.8	16.6	12.1	31.7	17.7	30	20.2	27.9	19.3	26.3	25.8	22	22.8	29.4		
	G.	5.8	12.2	18.2	21.9	19	20.1	15.5	24.3	22.0	25.4	22.2	20.6	24.3	25.3	19.3	22.3	11.8	32.9	36.5	28.9	9.4	
Highest, } Mark }	B.			40	36	53	117	45	95	67	138	84	141	96	121	103	137	94	116	117	134		
	G.	35	53	70	68	85	95	83	100	113	94	110	106	142	104	124	96	131	126	139	68	142	
Lowest } Mark }	B.			0	1	10	27	6	30	19	26	21	13	13	14	23	39	6	40	5	33		
	G.	16	4	1	3	8	31	34	22	6	2	15	19	36	17	25	24	28	23	12	20	37	
Median.....		B.			19	20	29	68	32	65	38	76	44	66	59	70	53	81	45	71	63	72	
" .....		G.	25	20	28	53	44	56	56	60	61	65	87	53	64	52	72	52	62	62	69	64	79
Aver. } Error }	B.			11.2	8.6	2.9	2.4	7	2.8	3.2	4.2	2	8.7	1.9	3	1.5	3.1	1.2	3.8	7.8	3		
	G.	1.7	4.1	8.1	16.2	3.1	5.1	2.5	3.7	3.2	6.4	2.1	5.1	2.7	4	3.7	2.9	3.9	3.3	6.2	4.1	1.8	

Table III.—MULTIPLICATION.

Ages.	8½	8½	9½	9½	10½	10½	11½	11½	12½	12½	13½	13½									
No. of Boys.....			8	7	12	15	10	19	10	38	12	44	13	25	15	34	16	18	10	16	
No. of Girls.....	15	22	32	8	35	10	24	10	34	9	28	15	44	14	35	11	43	10	28	14	17
Aver. } Mark }	B G		28 22	30 23	41 35	63 43	50 45	59 63	70 56	74 70	74 57	69 70	83 72	71 69	87 65	85 69	76 77	80 88	92 86	80 90	
Stand. } Devn. }	B G		3.5 6.6	9.7 8.5	27.6 17.8	21 15.6	23.3 19.1	17.5 22.5	21.9 21.4	29.7 26.9	27.8 20	27.8 20	21.7 26	23.6 24.2	25.3 27.0	26.6 25.1	35 13.2	17.0 25.8	22.1 24.6	30.8 25	
Highest } Mark }	B G		46 57	49 40	113 78	102 69	106 75	86 95	92 89	131 96	102 111	131 132	125 106	115 131	124 94	132 131	128 124	129 131	129 113	128 128	
Lowest } Mark }	B G		8 0	18 6	6 0	25 18	21 16	24 21	22 7	25 20	28 31	15 20	42 31	37 10	38 16	11 27	3 39	57 14	48 38	24 27	
Median .....	B G		27 18	27 21	42 28	63 40	44 48	60 64	51 83	70 59	84 71	66 64	91 70	63 65	84 78	86 73	83 67	76 68	89 78	85 86	
Aver. } Error }	B G		4.5 4.5	3.5 2.8	3.5 3.6	2.1 2.8	1.7 4.3	3.2 2.5	3.3 4.3	3.7 1.6	2.2 2.8	3.9 1.8	3.6 3.1	2.6 2.2	2.3 4.2	2.5 1.8	5.7 3.4	2.8 2.2	3.9 3.7	4 3.2	

Table IV.—DIVISION.

Ages.	8½	8½	9½	9½	10½	10½	11½	11½	12½	12½	13½	13½										
No. of Boys.....			8	7	12	14	10	19	13	38	12	44	13	26	15	34	16	19	10	16		
No. of Girls.....	15	23	32	8	35	10	24	10	34	10	28	15	41	14	36	11	40	10	28	14	17	
Aver. Mark } .....	B		11	8	21	29	24	32	25	45	34	42	45	43	42	56	32	64	51	48		
	G	6	4	10	12	20	23	25	34	31	38	40	37	40	40	47	35	43	42	55	54	58
Stand. Devn. } .....	B		10	0	3	6	22	20	6	18	1	14	2	17	3	26	1	14	2	17	3	26
	G	25	3	6	11	2	7	5	14	8	18	1	17	3	18	1	21	2	12	7	22	5
Highest Mark } .....	B		34	15	84	84	71	56	51	96	89	96	90	96	93	96	75	91	80	92		
	G	25	12	36	26	58	45	58	68	92	58	87	83	94	78	95	69	96	91	96	109	93
Lowest Mark } .....	B		0	4	2	8	9	7	3	3	4	4	20	3	15	3	1	27	30	3		
	G	0	0	0	0	0	0	0	0	8	7	9	12	8	2	1	21	14	9	27		
Median .....	B		10	6	17	30	18	33	24	39	31	39	39	44	42	55	31	53	44	51		
„ .....	G	4	4	5	12	18	25	24	33	29	45	37	34	33	40	42	39	39	38	55	52	57
Aver. Error } .....	B		4	7	3	5	3	9	1	3	3	7	2	9	4	2	3	4	3	5	6	
	G	3	3	4	7	13	2	3	7	7	3	1	4	2	8	5	2	1	8	2	3	7



## BRIDGE HEADS IN HISTORY.

By HELEN M. MADELEY, The Training College, Bingley.

"FROM the known to the unknown" is a stale axiom, but there are still unreclaimed areas to which it has not been applied.

To the teaching of History it does not at first seem even applicable. When one was quite small History was delightful, not for its Known, but for its Unknown. It was the "old, unhappy, far-off things" one wanted to hear about: the mists and mystery of antiquity were its enchantment. This magic never quite disappeared, but as one grew another taste emerged. There did come a time when the most thrilling thing History could give was an explanation of one's surroundings, and though the glamour of the Past did not fade, it was the link with the Present that aroused one's eagerest interest.

Children of seven love the story; later, they want to know if it's true; later still, what it has to do with them. I once taught a class for a year, with elaborate efforts to get them to discriminate between the miraculous, and possible, and verifiable elements in my selected tales; and at the end of the time I was rewarded with the admiring exclamation, "And did you really make up all these stories yourself!" But two years later, it was of vast importance that I could attest that I had seen Magna Charta with my own eyes; and not long after that, the happy coincidence of an election made the evolution of the Cabinet a matter of almost personal concern.

I think that for most children the shifting of the centre of interest comes about the ninth birthday, and it seems to correlate with the restless period which afflicts many classes when the demand for stories slackens. They don't want to listen to them, or to anything else, for long, though they are still incapable of any very concentrated or continuous effort of their own.

The new taste ought to help one to deal with the new restlessness, but it is not at first sight easy to utilize this taste systematically in History teaching.

We are sometimes told to begin with the present day, and teach History backwards. But where in the present day are we to begin? The modern world is less intelligible to a child than the past. Its motives and interests (except during a period of relapse, such as the present moment) are far more remote from his own psychological experience than the motives and interests of the primitive savage. If we want to make our point of departure some factor in his own surroundings, we must find something in the present other than its "history."

Surroundings in space are more promising than surroundings in time, but even the work done by the members of the Regional Survey Committee does not seem quite to meet the need. Of the keenness of their pupils, and of the freshness and vitality of their work, there can be no question; but local study, even in the most favoured locality, does not supply all the threads we want.

Why should we confine ourselves to material survivals? The local castle is an interesting place to start our studies of mediæval warfare, but at the best it is a relic, probably a ruin, certainly no longer a fortress. There are survivals more living than that, in the speech, the customs, and even in the dress of our every-day life. Why should



not our studies work backward from these as well as from local antiquities and modern politics? We want all the bridge heads on the past that we can hold.

To work along these lines three things are essential: (1) a resolute abandonment of chronological sequence; (2) the initiation of each piece of work by the study of some connected feature in the pupil's environment; (3) a large wall chart. The first requires nothing but mental effort; the last, only abundance of paper.\* The environment is the difficulty. At first sight it seems insuperable, if one is to lay the foundations of any general knowledge of English history; but the difficulty begins to disappear when one makes a list of the factors one really regards as fundamental. I suppose no two people's lists would be quite the same, but it is astounding how many things everyone eliminates when they force themselves to defend each inclusion.

One's minimum fixed, one begins to look for starting points—threads in the present that connect with each of those strands in the past. Local history is one's first hope. Places are variously blest, but every place has a past. Most of my teaching experience was acquired in a Yorkshire manufacturing town, at first sight not a very promising subject. It has a ruined abbey within a car ride, and a Norman church, and traces of a Roman camp five miles away, but there seem no links with its own mediæval background—even its parish church is a Victorian reconstruction. Yet it yields to treatment. It has an admirable Domesday entry, a beautiful Laudian church, memories of Wesley and Priestley, and various reminiscences in its coat-of-arms. A good deal of history is needed to explain all these.

Old landmarks can't be visited without passing the new developments—chapels and hospitals and schools, the railway station, and the post office, and the mills, and when these have been observed and mapped, the children have imbibed, painlessly and unconsciously, the beginnings of a knowledge of modern social and industrial conditions. One can only stake out a claim, but the mine can be worked at leisure later on.

What local study won't give us, common objects often will, and fortunately (the weather being what it is) these can generally be brought within the walls of the school. Flags are invaluable. The Union Jack, the Tricolour, and the Stars and Stripes will introduce us to the Crusades and the Irish Saints, the Stuarts and the Bourbons, the French Revolution, and the American War of Independence, and we can explore the history that lies behind their origin just as far as the children's curiosity will carry them. Coins and customs give us other bridge heads. If one has enough anthropological knowledge to recognize racial types, the class itself would serve to introduce us to our various ancestry. If that is too difficult an approach, language does even better; either the calendar or the map will furnish us with most of the necessary material.

The present—even the present of the very young and very ignorant—is connected by so many threads with the past that the finding of those that run back to the bits of the pattern we want to reach cannot be a very difficult business.

Such a method, of course, involves a complete disregard of chronological sequence. That is one of its chief virtues, for it allows us to jettison a vast amount of dead matter. One may have constructed

\* This was written four months ago.—H.M.M.

one's syllabus with the most rigorous determination to teach nothing of merely academic interest, nothing not filled with significance either by its power over the past or by its direct connexion with the present; teaching in chronological sequence always brings back the accursed thing. The lust of completing drives us to the link lesson, and our work is once more clogged with the trivial and the dry. But if our scheme is to be based on environment of place and custom and speech, chronological order must go; and, automatically, the lesson which links vanishes before the lesson which unravels.

Disregard of chronological sequence cannot, of course, mean disregard of chronology. All events must be charted. The great chronological chart running round the classroom fixes dates far better than any order of lessons. It offers excellent opportunities for exhibiting drawings and illustrations, and consequently acts as a great incentive to their production; and, incidentally, it furnishes the best excuse for giving restless people a change from their desks.

Such a chart is the best basis and initiator of historical generalization; indeed, as it fills up, the generalizations make themselves. The constant interplay of subject, and the casual and incidental acquisition of knowledge which the method implies, suits the mood of the children at an age when their thoughts are naturally discursive and their interests quickly exhausted; and the aroma of novelty and irregularity which it brings into the classroom is a boon both to the teacher and to the taught.

## THE TEACHING OF ART IN TRAINING COLLEGES.

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GREAT progress has been made in the position of Art in the Training Colleges and in the Schools during the last ten years; a progress which is due in the main to the energetic advocacy of an artist-inspector—Mr. Tunaley, though his efforts have not always been favourably viewed by professed educationalists; the Universities have given no help, and much actual opposition has had to be overcome.

It has been said that the Art work in the Training Colleges was at one time allotted to that member of the staff who had most free time or who was most willing to be imposed upon. In any case, instruction was not taken seriously, and it consisted in the main of teaching tricks, without any reference to the fundamental problems of an educational character involved in giving expression to what one actually sees. Every trace of artistic feeling was lost by the methods in vogue.

But the Training College was not wholly to blame. The student's antecedents in respect of Art were, and are, not favourable. Those who have been students in an elementary school are perhaps the most favourably placed, for the Art teacher could do better with the average Standard VII child than with the material he receives from the secondary schools where Art instruction is either crowded out or put into a Friday afternoon side-track, or looked on as an alternative with drill and half-holidays. Is it not true that in these schools Art is the Cinderella of the curriculum, and has to give way before music-practice,

general lectures, and excursions? In any case, the pupil from the secondary school gives up Art entirely before he comes to the Training College. The specialization for University preliminaries leaves no room for definite Art teaching.

Nevertheless, even in secondary schools the position of Art is improving. The staffs are better, and the educational value of the subject is winning recognition, though the position is far from what it should be. Why should 90 per cent. of our students enter college without any training whatever in colour, and without having done any drawing for the two years before entrance?

In the Training College itself students are expected to give some time to Art; this usually means as little as possible, and those who are taking Degree courses in a University do not seriously touch the subject. In the Universities where Art courses do exist the subject is analyzed and discussed from a purely intellectual standpoint, and an affectation of knowledge is produced without any practical study whatever. It is presumably highly cultural after the fashion of Baedeker's guides. Unhappily, it is from the students of these academies that Masters and Mistresses of Method are chosen to lecture, amongst other things, on the teaching of Art. Such people are the laughing-stock of the Art teaching profession, for in their ignorance they rush in where angels fear to tread. The student's attitude towards Art should be natural, practical, and appreciative, and yet this training leads him to pose as conversant with Art matters; it makes him critical, analytical, and German. Worst of all, it is superficial, and therefore subject to the changes of fashion. This attitude of the Universities towards Art needs modification, or the students in the Training Colleges will suffer. Further, those responsible for the curriculum of educational institutions must learn what a great part capable and free Art instruction might play. There are people who can see no good in a class modelling a Corinthian capital, and who at the same time will insist on Greek, Latin, and Classical History, and even suggest architectural lectures by the way. They ignore entirely the possibility of establishing the most intimate relations with Pheidias and his times, such as may come from actually feeling the way the great artist's work was built up. Such an experience is surely more than mere knowledge. They forget, too, that it is Art and the products of Art which furnish us with so much of Greek and Roman History.

Every Art teacher is familiar with the complaint that students cannot draw and colour a map or a section, and with the request that he would be good enough to show them how it should be done. This is, of course, nothing less than a request that the Art Master should do other people's work. It seems to spring from the idea that Art instruction is of no value in itself, but is admitted to the course in order to enliven the biblical and literary, the geographical and historical, the scientific and the culinary (icing for bride-cakes) courses.

The Art Master, in fact, must have a large repertoire, and be at the beck and call of any of his colleagues whose Art education the Universities have neglected. In any case, however, Drawing for special purposes is not Art, and cannot become Art. It is a special kind of language comparable to the technical language of the lawyers. Some educational folk have discovered the uses to which Drawing may be put in furthering their particular interest—child-study, for example. They look at the drawings of the children and discuss them, though



they are themselves devoid of the very grammar of the language. They have no Art feelings, and cannot therefore enter sympathetically into the child's endeavours. Art is, of course, concerned primarily with thought and feeling, with imaginative creation, and with the portrayal of what is invisible and intangible. At best, the incidental representation required for Geography, History, and the like, is a side issue, a mere fringe, something to be forgotten and looked up again in a dictionary or a library. The great aim of the work should be to train the instinct for beauty of line, form, and colour in nature and in workmanship, and I propose to suggest how this might most conveniently be done.

In the first place, a course of Art study should form a part of every University Degree course, or at least it should be possible for a student to include the subject in that course, though this would not be so necessary if Art formed an important part of the examinations qualifying students to enter Training Colleges. As long as this is not the case, Art instruction will be neglected in the higher forms of secondary schools. Were some such reform as this arrived at, the Art instruction in the Training College might become a source of national pride and enthusiasm, and might bring untold advantage to the next generation.

Incidentally, the analytical mind of the professional educationalist might be tempted to taste the joys of Art instruction, and to *feel* as well as *think*, to *experience* as well as to *dogmatize* upon the stages of artistic progress. Until some such position is reached, no person without practical experience of Drawing or of some art craft ought to engage in any way in the teaching of Art. The path is so difficult, and taste is so personal, that a real expert is needed to advise, awaken, and sustain an Art interest, and such a man must himself have experienced and felt as well as thought about these things.

Under such conditions, the first year of a student's course might be spent in receiving impressions and gathering material from plant and animal life, from architecture, from illuminated manuscripts, or copies of them, and from museums. Thus he might obtain some grasp of a variety of possible methods of interpretation in tone, line, and colour. This grasp would be based upon both visual and practical experience.

At the same time, there should be lectures upon the corresponding problem in the elementary schools, and demonstrations and experiments on these lines should be carried through in those schools under the general direction of the Art staff. Considerable freedom in this respect should be allowed to the Art teacher. We are fortunate in Leeds in this respect, as the members of the Educational staff take the specialist into their counsels, and invite him to map out a course of teaching exercises and arrange demonstrations for elucidating principles.

Some difficulties arise when the artistic efforts of children are considered from the standpoint of lessons in History, Geography, and Science. The aim of these lessons is not, of course, artistic, and the drawings are not judged from this standpoint; they are merely tests of the facts received, imperfectly understood and doubtfully expressed. They are usually looked at by teachers out of sympathy with Art, and drawings which are historically accurate are commended, and those having artistic merit are often condemned. The idea that children draw what they know and not what they see (actually or imaginatively)



leads to many mistakes. To ask him to put into picture form what he has learned in his History and Geography lesson is like asking a child who has tasted a lemon to tell that taste musically.

The second year students would begin their course, having made a collection of studies from nature, from examples of craftsmanship, lettering, architecture, and the like. Upon these studies, which have not yet made their proper impression, we wish to base further work and develop the artistic instinct in an appreciative and practical way. Thus, we might show the student how to make his own portfolio, in the production of which he would find use for his previous study of lettering, and the relation of the character of the project to processes employed. It is in problems of this kind that the Art specialist scores and makes his subject live. During these exercises the student will desire to see what has been done. In the problem of lettering he will search out examples of monograms, historical and contemporary, and even so modest a quest conducted with enthusiasm is not without influence upon character. He may work examples at first in stencil, and may subsequently modify them into other useful channels (embroidery and bookbinding for women, wood inlay, leather or iron-work for men). We might at the same time encourage the student to make a pun or joke upon his own name, or adopt some device particularly suitable to his christian or surname, as Torrigiano did for Margaret Beaufort upon her tomb in Westminster Abbey. Later on we may substitute for the letters a flower or a leaf, an animal, a person, or a fish, and search for the interpretation of these natural objects in the past periods of English and European Art. In this way the student's visual memory is enriched, and he uses his equipment to enliven a well-made object. It seems to me that we may study nature until doomsday and only produce imitation; that we may study old masters for ever and become mere hangers-on and tricksters. In either of these cases the end is soon reached, but with the study of nature in all its forms, and a parallel study of the past periods of English Art applied to the problem of producing a useful object, at once well made and interesting, furnish great hopes of achieving desirable results without creating a mere mode, and without sacrificing the individuality of any student.

If, on the other hand, the Art teaching is made subordinate, shall we say, to History, artistic feeling is sacrificed, and the sense of beauty is as ruthlessly destroyed as was Louvain by the Germans. To teach Art in the historic order of its development is surely as foolish as to try to teach English children their mother tongue by beginning with Norman French.

We would then have our Training College students faced with fine heraldic expressions of the lion, the owl, the griffin, and the like, as well as the rose, the oak, the ivy, and the thistle, and all that wealth of inspiration from Gothic ornament which has interpreted the floral gems of our country lanes. Such objects might be used to drive home many points of historical and geographical interest. Ultimately we may consider them for their own sake, interpreting them as purely as the limitation of materials we employ will allow. This is the place for technique.

By some such procedure the power to use the studies which have been made will be strengthened and guided into lovely channels of technical workmanship, and we should also achieve a much more intelligent appreciation of beauty in landscape and architecture. Any

collection of studies of objects from museums in use at a Training College should include historical and geographical evidences of the Crusaders, of the close relationship of the Scottish kingdom and the Continent, of the great geographical features of the country, as well as objects illustrative of economy in the use of energy and material. Apart from these we should try to help students to visualize scenes described in literature. We might also place before them figures from the life in the costume of the Cistercian, a Crusader, a Cavalier, and a Roundhead, as well as colour-drawing of good examples of architecture. We must not only talk about these things, but endeavour to make the students feel their influence.

Educationalists may complain that this sort of work does not exercise the critical spirit, nor does it call for observation, but neither a critical spirit nor observation will create what we need, that is, the development of the appreciation of beauty, an attitude of mind which is ready to welcome the appearance of beautiful things. A procedure of this kind will put a stop to drawing and making models of pillories, stocks, guillotines, savage implements of warfare, toys, and the like. Why do we ask students to make these things? Is it because the teacher's capacity for description is too limited?

Whatever the details of an Art Course may be, it should give opportunity for the best students to specialize in some Art or Craft. Such students will, of course, do their best work outside College. To facilitate a scheme of this kind, the Board of Education should put students who promise to make the best teachers of Drawing through a serious examination. Free courses at the Royal College should be available, with travelling scholarships attached, such as would enable the holders to visit and sketch in characteristic cities like Oxford, York, Chester, Salisbury, and Lincoln. Thus we might produce teachers for the primary schools with minds stored with artistic memories, and full of appreciation for all that is left of our national artistic instincts. The tour should be carefully planned by those who know, and the student would keep in touch with his old teachers during his itinerary. To succeed, a plan of this kind should put those who have followed it on the same level from the point of view of promotion as the men and women who have pursued Scientific or Literary Courses.

Coming back to our main topic, would not the eye trained to see the beauty of nature, its light, life, tune, its shades and sorrows, and the hand trained to express them, have some moral effect upon the student? Will not the trained sight of the person who feels the heightened pleasure of a May morning or of an Autumn glow do something to help him to retain the image as an abiding impression, and to get nearer, perhaps, to the worshipping attitude instead of to that of the mere imitator? Such a capacity to enjoy seems to me a greater personal gain and more important nationally than capacity for intellectual gymnastics. A single attempt on paper or in enamels to depict the glory of a sunrise, and we come nearer to understanding how the heavens declare the glory of GOD and the littleness of man.

We have in England acres of museums and tons of fine wrought ironwork, woodwork, and stone carving, showing the strength of our national character. We have, perhaps, the finest school of portraiture and landscape painting that has ever existed, and we cannot touch these subjects in Training Colleges owing to the demands of the traditional curriculum. Is the seeing and faithful copying of the

characters on a bench end of a pew, or in stained glass, or even a measured drawing, of no use for character training? It is, if we place our students directly into material and life and stop trying to teach them to illustrate lessons. The student may design an object, and when he comes to material have difficulties to overcome; he may have the grain of the wood; the strength of the iron or the softness of the silk. These difficulties have to be fought and conquered. The work, if guided properly, will show the character of the student, and the student whose strength is grace might have work in iron prescribed to make up his deficiencies.

Both Training College students and children in the Elementary School may be brought into touch with such moral and economic qualities. We shall exercise them in choosing good things, and so hope to guide them into pure and lofty channels. The Board of Education, in its suggestions, ask that those objects which have served mankind throughout the ages, and which have got their character and shape through usage, should be selected as examples for Drawing and Construction. We are here concerned with qualities which are deeper than the visible. They must be felt, and we must realize sooner or later, in our Art teaching, that we cannot always draw what we are looking at, neither ought we, but rather should we try to represent that nobler something which comes from feeling.

All Art training is concerned with slowly inhibiting the hand from running away until finally it may quickly, severely, and tastefully record impressions received, and convey them to others.

In conclusion, every student in a Training College ought to be able before the end of the 2nd year to understand what he is seeing, and to be able to express what he is prepared to teach in some way or other graphically. At least 15 % ought to put this down artistically, and be capable of exerting a refining influence throughout a school. These should have made a study of one or two crafts, and continue the same at an Art School. They would then be keen to influence the creative spirit of our children in a natural direction instead of imposing tricks upon them copied from Leipzig. Their knowledge of workmanship and Art would be able to press home the immorality of bad and slovenly work, whether it illustrates an intellectual problem or not.

I hope in the next ten years to see such economy practised as will banish all charts of rivers, sections of mountains, relief maps, pictures of pillories, guillotines, sections of fruit on brown paper, and the like, from our school walls. Instead, nothing of a permanent nature, but changeable examples of workmanship in colour from Historic examples, Architecture, Portraits, subjects from Literature, Landscapes that incidentally convey geographic or nature truths. (A reproduction of the Pear Tree after Lord Leighton for Nature Study, for example.) These would constitute the school library of Art, and, along with nature for a guide, form a nucleus collection of Artistic work to serve as our inspiration.

Now, which method are we to adopt, or which do we really prefer for children? Are we satisfied that they should become intellectually brilliant, and yet fail to find pleasure in light and nature, that they should understand the proportions of the outermost parts of the earth, yet be incapable of appreciating the beauties of a sky or a mountain-peak; that they should read books, and yet be unable to follow a description of natural phenomena? Would we not rather so saturate the infant mind



with good pictures and fine work, long, long before they can be understood, so that the images of beautiful things may become unconsciously but indelibly impressed upon their minds. True knowledge and appreciation come after this first full acquaintance with reality. In the same way, I believe, the instincts for beauty of line, form, and colour in nature and workmanship might be developed among our students, and at the same time we might equip them with such lofty ideals in Art and Science as will affect the taste, character, and life of the next generation.

## FORMALISM AND EXPERIMENT.

### III.

By S. F. JACKSON.

IN former parts of this article it was suggested that the problem of formalism could not be identified with the statement "that mental power, however gained, is applicable to any department of human activity." And further, that these experimental inquiries furnished no disproof even of that statement. Much less may the results therefrom be regarded as of any value in the study of school curricula. Neither the ambiguity in the results nor the irrelevance of the inquiry is removed by a more deliberate and elaborate experimentation upon the lines chosen. Elaboration of procedure makes the numerical results less and less reliable as indexes of the true effects of practice even in the tasks chosen, and, therefore, further still removed from being any indication of the influence of such distinguishable elements in the process of education as courses of study in this or that subject, or this or that kind of instruction.

We must, on the word of their authors, regard these inquiries as an attempt to explain how "improvement in one function alters others, and to what extent." An attempt is made to secure statistics which, by their concilience with the experimenters' expectation, based on an analysis of the tasks upon which the observers are engaged, can be cited to show "in what directions and under what conditions transference occurs." The terms are worth keeping clearly in mind in the perusal of the records. Ultimately the inquiry becomes an essay in the arithmetic of variable quantities, and in order to secure representative figures an elaborate machinery has been evolved. Dr. Sleight<sup>1</sup> would claim that the disparity between the findings of the two groups of experiments (noted above, p. 241), a divergence of a "more or less," has been resolved by his more thorough-going application of experimental machinery, and by the application to the numerical returns of two devices of measurement which have been invented by statisticians. It is his work that one has chiefly in mind in the following notes. The real value of his inquiry appears to be to show that experiment of this kind cannot solve the problem asked of it. An examination of the steps of the work produces the conviction, not that transference is not possible or that it is limited, or that it proceeds in such and such "directions" and under such and such "conditions," but that it continually slips through the machine. We may, indeed, assume that

<sup>1</sup> *British Journal of Psychology*, vol. 4.



his work has demonstrated that transference in the kind of task set is rather less than more; but the measures that he has taken in doing this do nothing so much as to convince us that his inquiry is so far removed from the practice of instruction that the results are quite irrelevant.

It is not a little paradoxical that an enquirer who has written with some vehemence against formalism should commit himself to such a ruthless exploitation of a method of inquiry got on the one hand from experiment in physical science and on the other from the theory of statistics. For the machinery of these experiments has been developed into a plausible but purely formal application of the method of difference. The core of the matter lies in the comparison of numerical results secured in successive tests by "practised" and "unpractised" groups of observers. It is necessary to follow the steps of the experiment in some detail. After a preliminary series of tests, smaller groups of observers, these groups, "of approximately equal average ability," are formed from the original group. Of these groups one or more is "trained" in a task, e.g., learning series of tables, or of nonsense syllables, or poetry; and one remains "untrained," i.e., it is occupied in school exercises that do not involve the same kind of experience as is given by the training tasks, while the other groups are "practising." When the prescribed period of training is past the parent group is re-formed and put to tests similar to the former tests. Another period of training follows, and then a third test. The results of the practised and unpractised groups in the second and third tests may then be compared with one another and with the initial test. If, it is assumed, the results of the practised groups show a greater movement from the figures of the preliminary test than do the results for the unpractised, then the task undertaken in training has had a direct influence upon the experience involved in working the second and third tests. If there is no difference between the results of the practised and unpractised groups, then the one has had no influence on the other, and presumably the idea of mental growth or the inhibition of mental power is a myth: one function does not affect another. This arrangement is the keystone of the most impressive of these experimental inquiries. The various devices for checking the elusive forces which continually threaten the simplicity of the design will be mentioned in turn. Plausible as the arrangement may appear at a first glance, it will be found upon closer scrutiny to be the mere outer shell of Baconian induction. We are presented with something that looks like a known situation into which in the one case a known factor is introduced, and in the other withheld. "The only factor introduced in the case of three of the four groups," writes Dr. Sleight, "was that of practice . . ." in the set tests. So that any variation in the results between practised and unpractised groups will be due to quite definitely perceptible concomitant variations in the experience of the groups. This is purely illusory. There must obviously be some "known factor" introduced in the case of the "unpractised" group—a factor equal in all respects in which "equality" has any precise meaning, to the practice. It is quite as long and apparently pursued as earnestly. The observers<sup>1</sup> were never allowed to have the impression that they were in any way handicapped or under conditions not similar to those of the others." This was designed<sup>2</sup> to obviate the possibility of any laxity or lack of

<sup>1 2</sup> Sleight, *British Journal of Psychology*, IV, 405.

interest on their part." How this was secured is not stated, possibly by a homily or exhortation, a stimulus that must have had an immediate effect upon the resolution and will of the observers. Even if they were not so stimulated, but remained throughout "doing sums," a factor was present; a force which, on the assumption made by the experimenter in the case of the other groups, was likely to have some effect upon the numerical results of the next test. The difference between the experience of practised and unpractised groups is not that one practised "tables" or "poetry" or "prose substance," and the other did nothing, but "lived a blank" for that time; but that the practised groups engaged respectively in tasks that were (a) novel ("tables" practised—the "tables" were not only nor mainly arithmetical), (b) less novel, moderately familiar (poetry practised), (c) very familiar (prose substance practised), while the unpractised groups engaged in a task that was familiar—less familiar than (c), and possibly more familiar than (b)—and had the stimulus of an exhortation. We are looking for something which is surely vain if we expected to find much difference between practised and unpractised groups; or if we find a difference we are under no obligation to believe it due to the practice. If we look at the matter in terms of time, the only measurable factor in the whole experiment, we cannot resist the same conclusion. Practice, in the three media respectively, took place on twelve occasions, on each occasion for thirty minutes, between two sets of tests; in all there were twenty-four half-hours of practice spread over a period of six weeks. Of the twenty-four hours a day through which the children endure for these few weeks the experimenter knows what engages their energies for half an hour. The rest of the time is not mentioned, so we may presume that the experience of that time is treated as negligible. It will be the same, to all intents and purposes, for all the groups. For twelve of the 1,000 odd hours covered by the experiment the practised groups were engaged upon tasks which differed but little, in respects that seem to be of practical importance in this matter, from the task in which the unpractised group was engaged. Is it any wonder that an experimenter can make his numbers show little difference between the groups?<sup>1</sup>

The method of parallel groups cannot, in experiments of such brief duration, be considered a persuasive arrangement. It carries no conviction that any results obtained by its use are of any value in dealing with school training. Moreover, we have no reason to believe that in any one case, or in any number of cases, except on the evidence of introspection, that the intervening practice between two tests is a force of any moment in determining the results in the second of these tests. And on the evidence of such introspection as we have we find that experiences other than those met with in the official hours of practice are brought into use in working the tests. In the case of the children who were Dr. Sleight's observers, one may surely suppose that many of them in the 900 odd unofficial hours that surround the experiment may have met with striking experiences that might be impressed into service in the tests, in spite of the official practice.

<sup>1</sup> There is a tendency on the part of experimenters to regard their groups "of approximately equal ability" much as an experimental agriculturist looks upon four plots of earth with the same soil, or even as a chemist upon four test-tubes containing the same chemical mixture. It might be pointed out that the equality of these groups is quite conjectural. They are not equated *qua* groups but on marks given to the individuals which compose them. In so far as they are taught or drilled as groups, just so far will they begin to vary. Their history *qua* group will present for the investigator an unknown variable.

The analogy of the "with and without" as practised in chemistry and agriculture breaks down, and breaks down badly. It is not possible to eliminate, or to confine, or to make allowance for such contagious things as ideas in the manner that this plan of experimentation requires.

The unreality and make-believe of the venture is not removed by such safeguards as are taken to secure equality in the factors of the situation that the experimenter brings about. There is, firstly, the attempt to secure three sets of tests of equal difficulty. We can agree that as the tests chosen can be stripped of all symbolic value, as they can be made up of either meaningless parts or of sheer memory habits, as, e.g., in many "tables," equality may be secured; an external equality, at any rate. But the matter is not quite so simple where passages of writing, in poetry and prose, are taken. To secure this equality, which in a statistical inquiry appears to be a vital matter, we have an amplification of the parallel groups. As many larger groups, from which the smaller groups are formed, as there are series of tests are taken, and they attempt the three series of tests in cyclic order. Thus—

Large Group X took the tests in order A.B.C.

" " Y " " " " " B.C.A.

" " Z " " " " " C.A.B.

And so, "by taking the average of the first cross-sections of all three schools, then of the second . . . it was possible to assume that any improvement or deterioration observable in the results of the second and third cross-sections was due to some other cause than that of a decrease or increase in the intrinsic difficulty of the tests." There's virtue in an average; but is it possible to assume in matters of this kind that it is of no consequence to the observers in what order they meet their experiences? Is it not credible that of three sequences, (1) A.B.C., (2) B.C.A., (3) C.A.B., the first result of (1) may be very different from (2) and from (3)? Can this be accepted as a method of equating experiences? There is evidence, I believe, even in these narrow experiments that the order in which the observer meets the different tasks is a factor of importance in the production of the results. But I am not concerned here about the figures, so much as about the analogy between the situations set up in these experiments and those of school education. Even if we allow that the order in which three passages of prose or poetry chosen by a person of discernment are apprehended, or three sets of tables, or three sets of points in a circle, or three sets of nonsense-syllables, is it possible that we can be expected to universalize the observation and say that it is of no consequence in education in what order we present and employ our media?

The precaution to secure that each group should receive an equal amount of training is no more convincing, except upon like terms. The three supervisors took each practice group in turn for one week. If we could think of these three as exact replicas, or of children as not at all susceptible to the influence of the personality of their elders, we might, with the help of averages, have some faith in the arrangement as securing irreproachable figures. But by so much as we inhibit the influence of the personality of the teacher through reducing the tasks to routine and simplicity, by so much do we recede from normal teaching conditions.

At every turn one finds ambiguity and variability, grounds for questioning the efficacy of the machine in measuring even its own data,



and much more reason to question whether, even if it can do so much, the results are of any value in providing an answer to the question that, we are told, is to be settled once for all by experiment. Nothing is clear cut, nothing definite, nothing morally certain; almost anything is possible and nothing really probable. We are dealing mainly with the framework of experiment without the vitals. Every precaution is the spring of new factors, variable and incommensurable, and every precaution takes us further from the problem at issue.

On the one hand, then, the selection of the "material" of the experiment proceeds by a false simplification of the training process, and on the other, the elaboration of machinery introduces the possibility of factors which make any results more ambiguous. Assessment of results is difficult. In the first place, some system of marking must be used that will enable the experimenter to keep a uniform standard of appraisement throughout; and in the second, some method of measuring and stating the results of the "groups" must be found that will enable the results of heterogeneous tests to be compared. The attempt to secure these desirable things has reacted upon the tests. They have been simplified, in the sense that tests have been invented and selected the appraisement of which can proceed upon a definitely constant plan. Such a plan is presented by tasks to each step of which a quantum of marks may be given, a definite number of marks for a definite step, the marks for the whole being the total of the marks for the parts; or, where the whole response can be judged, "right or wrong." The tests which satisfy these requirements will tend to be routine and mechanical, or purely logical. Appraisement by the experimenter can then proceed without variation. There is a minimum demand on his intelligence and none on his feelings, and the marks stand definitely for facts. It may be noted, for example, that all the tests used by Dr. Sleight were of this nature with one exception, namely, the test which calls for the reproduction of the substance of a passage of prose; a notable exception, as will appear. And even in this case it was found "quite easy to assess. Every correct fact was given one point." Dr. Sleight even makes it a reason for scepticism of Mr. Winch's results that the latter selected exercises for experiment<sup>1</sup> "where the difficulty of marking is enormous." Now if we may treat as negligible the unchecked and varying factors which influence an experimenter even in the appraisement of tasks of this kind, we cannot with impunity disregard as negligible the marker's idiosyncrasy when we come to the assessment in numbers of "functions" that are spontaneous and creative in their nature; to judgments of taste, interpretation, appreciation, and conduct. But there are no results in the kind of experience where such judgments are used. The tests cannot by any means be regarded "as representative of the many different mental processes involved in memory work." There is, for example, a very wide field of experience covered by "affective" memories. This field is not represented in the experiments. On the contrary, the tests chosen are exercises which tend towards the opposite pole. Space is limited, and the expansion of the bearing of this criticism on the kind of exercise chosen for experiment must be left. My main point is to show reason why these experimental results, even if they may be regarded as approximate measures of the "functions" they deal in, pertain only to a narrow field of experience. They have a biased

<sup>1</sup> Though, oddly enough, he has just remarked that all Mr. Winch's tests are rote memory exercises.



simplicity. The machinery devised to secure figures which may be regarded as unambiguous symbols has been applied so ruthlessly that we can have no faith in any conclusions that may be drawn from them as a contribution to educational theory.

We are driven to a like conclusion when we consider the assumptions made in the effort to secure statistical compatibility between the results of the different tests. In the earlier records the results are expressed in percentages; a method which is bound to produce highly anomalous results, if we are to take those results as doing anything else than expressing a general less or more. On this matter Dr. Sleight speaks very much to the point:—"The percentage method is useless and even misleading when the inequalities are due to different grades of practice, or to different kinds of material dealt with; for it assumes that when one person has been so much more practised than another as to get twice as many marks in the same number of tests, it therefore becomes twice as easy for him to make a further improvement of a given number of marks. Whereas really the contrary is the case; the more skill he has already developed in the test, the harder it is for him to make further improvement." An improvement, for example, of 10 on 200 is not necessarily less than 50 on zero; or a movement from 100 to 200 cannot be regarded for all cases as more than from zero to 10. The percentage method is therefore abandoned, and the "mean variability" of the different kinds of performances is taken as the unit of measurement. The freer the variability the greater has been the influence of the interposed training, the greater the "transference." But if we are to accept Dr. Sleight's reasons for employing this device—"the more skill the observer has developed . . . the harder it is for him to make improvement"—it is obvious that the assumption is made that mental operations are subject to a law of "diminishing returns." There is much in the experimental psychology of sensation and of habit in support of such an assumption. It may be said to hold in a general way, though it may not be mathematically necessary, of any fragment of experience that can be mechanized and reduced to routine. And since the tasks selected in these experiments, with the exception noted, tend to assume such a nature, it may be a fair assumption to make in dealing with any numerical results from them. But if we can take this view, we are again brought face to face with the vital difference between the experiences dealt with herein and those in the full flow of mental enterprise. The value of an "ideal" or of a "concept of method," two means of grace which have been found even in a wilderness of figures, is not dulled by use into insensitivity, nor does it suffer satiety.

But in so far as this law of diminishing returns may be applied to the tasks selected for experiment, it will differentiate between those that may be brought under the term "common school exercises" and those that are uncommon, i.e., novel. The difference may be found persisting through the evidence. It is an inevitable sequel of the brevity of experiments of this kind; for if a particular test or practice is a "common school exercise," a spell of practice prescribed by experimental conditions will make little difference in the achievement. Successive tests with no practice in between must be regarded merely as the "exercise of identical functions." Now it will not be forgotten that some use is made in these experiments of nonsense-syllables and other disjointed material. On the other hand, there is the learning of poetry and training in the ability to reproduce the substance of passages

of prose. The former are similar in that they involve "arbitrary associations," similar to one another in that one particular, and different from the second class where the words and groups of words have a freight of associated experiences for the learner. The former are for most of the observers, let us hope, novel exercises. The latter are in common use and practice. Wherever, then, we meet with a striking difference between the results from the two kinds of performance, it is not to be explained away by the futile<sup>1</sup> device of saying there is a greater degree of similarity between the practice and the test in one case than in the other. Of course there is; precisely as we remember because we have a memory faculty. But there is here no ground for refuting transference, nor any light on the path that transference may take. On the contrary, the marked and rapid progress in the reactions to selections of disjointed material, of which there is abundant evidence in every record, and the "improvement" which groups of observers practised on such material show over non-practised groups, are evidence of the almost spontaneous growth of mnemonic devices, a common form of transference. The conclusion we must draw is, that just as far as an experimenter deals with experiences that can be brought within the ambit of any law of "diminishing returns," just so far will the evidence from his numbers be of little worth for the theory of training. The more nearly we approach a set of tests that can be appraised arithmetically, the further we get from any conclusions that can be regarded as a satisfactory answer to the problem which the experimenters have set before themselves.

<sup>1</sup> We may pass by the remarkable comments that have been made on the warrant of Prof. Meumann's results. But the following from Dr. Sleight's article in the *British Journal of Psychology* may be taken as sample illustrations of my text:—

- (1) p. 424. "Improvement made by those practised in 'tables' is in all three columns greater than that made by the group using the other medium (poetry)—a superiority represented by the ratios of 70 to 63, 85 to 66, and 15 to 4." And then the inevitable remark, "this points to the existence of other important common elements in the one case: for example, arbitrary associations. The associations in poetry are, of course, different." The ingenuity of the human mind in devising mnemonic systems is a common and persistent phenomenon in mental life. These will not be disguised even if they are called "concepts or method." They may be ineffective and wasteful in dealing with rational material because of the subjective coercion of the meaning of the symbols. But what appears worth notice is:—
  - (a) The experimenter cannot say from his results that if the observers had been as persistently practised in committing to memory disjointed material as they have been in learning poetry there would be this difference.
  - (b) The conclusion which the experimenter should desire to draw—if there is no transference or gain in mental power—is that practice in disjointed material of one kind is of very little help in learning disjointed material of another kind. But as a fact we find throughout the experiment a very free transference between tests in this kind.
- (2) p. 421. Under the heading of the effects of practice upon kindred performances; the group practised in "prose substance" and tested in "prose substance." This is the test to which I referred above. The results are refractory. In the first test, after practice a notable improvement was made, although the exercise was one in which, all their lives, the observers had had constant practice. In the next test there was no significant movement. The groups practised in other media (tables and poetry) overhauled the group practised in "prose substance." The successive tests, we have to understand, were practice enough to bring these otherwise practised groups to an equal proficiency in the reproduction of the gist of a passage of prose, with the group expressly trained in that exercise.

The explanation offered is that "saturation point" was not far distant when practice was begun, and that after three weeks practice "the observers' maximum was reached." To keep to these metaphors for a moment, so insidious a thing is transference, may we not as well believe that the examples selected for testing were *exhausted* by all the observers?

Further, how is it that, if this exercise is so constantly in use in the life of observers, as it undoubtedly is, "saturation point" should come in that particular six weeks selected by the experimenter? And what are "saturation point" and "maximum" in plain language? Whatever the former may be, if it really exists, it cannot be left unanalyzed and unmeasured by an experimenter who proposes to measure mental changes. In the one test that presents any serious hindrance to the securing of figures that may be regarded as of some utility, the machine breaks down, and we are switched off for an explanation to terms violently dragged from other fields of knowledge; a form of transference that logicians have often exposed as a fruitful source of fallacy.

## MINIMUM ESSENTIALS IN ELEMENTARY SCHOOL SUBJECTS.

### Standards and Current Practices.

UNDER this title the National Society for the Study of Education (U.S.A.) has published a series of studies covering very nearly the whole range of Elementary School work. The movement for lifting the practice of education out of the slough of opinion, and providing us with verifiable and therefore scientific data, is one to be very warmly welcomed in our own country, even though the results of inquiries of the kind may suffer from all the faults of pioneer investigation—faults of imperfect method, faults of wrong analysis, faults of improper emphasis caused by defective synthesis, and faults of wrong interpretation. These things will be put right with time, but when we have exact statements which can be put to the test of further inquiry and experiment we have something “solid” to work upon, and we may hope for progress.

It will, perhaps, serve the cause best if an outline of the methods adopted, and the results obtained, is presented, in order if possible to elicit criticism and further illustrations of quantitative work. The first study deals with *Formal Reading* (i.e., reading without reference to context). This gave rise to two inquiries concerning (a) the question of a standard vocabulary, and (b) the determination of a standard rate of reading.

For purposes of (a) ten primers in current use were analyzed. Words were grouped under two heads according as they belonged to phonetic families (phonetic words) or were laws unto themselves (sight words), and the number of times each word occurred was counted. Thus in the Phonetic group we get *and* (704), *little* (502), *it* (478), *can* (395), *up* (176), &c.; and in the Sight group, *the* (1733), *I* (965), *is* (853), *my* (526), *have* (278), *are* (224).<sup>1</sup> The Phonetic list yielded 530 different words, the Sight list 430. If the list had been restricted to words occurring ten times or more, the latter would have dropped to 190. The choice from the phonetic list was more difficult, and in the event it was left to random sampling.

Lists of words were then made at random from the two groups, eliminating from the sight list all words that occurred less than ten times. Each word was credited with a value corresponding to the number of times it occurred in the primers. The list given contains 84 words. Their total value is 11,698. Pupils from different classes were chosen at random (e.g., alternately), and were asked to read the list.

The children who read all the words in the list score 11,698. Each word missed meant a drop in the score corresponding to the value attached. Thus, a child who missed *man* dropped 622 marks, if he missed *table* he lost only 2 marks. Similarly *gray* carried 731 marks, *pane* 8, and so on. By finding the sum of the values of the words missed, and subtracting from the total possible, a result is obtained which is “a coefficient of ability to recognize the words of a standard vocabulary by the pupil; and an average of these remainders is a coefficient of efficiency for the teacher.”

In order to meet the objection that reading should properly be tested by sentences and not by words in isolation the test was also arranged on that plan. Credit was assigned to the test-words in the same way as before.

How far the method of marking which gives greatest credit to the commonest words as shown by their occurrence in reading primers is a just one is not discussed. Is it ten times as serious if a child fails at *cap* (104) than at *bit* (1,101)? Does such a test, based on immediate recognition such as mere repetition alone can give, really test reading power? By giving such slight credit to words like *mend* (4), *best* (6), *table* (2), *lamp* (1), *pipe* (2), *jump* (1), *push* (5), *high* (15), in contrast with *might* (87), *spot* (426), *run* (359), *hand* (831), *has* (433), *cake*

<sup>1</sup> Figures denote number of times the respective words occur.



(405), *still* (611), the test seems to ignore entirely those processes of analysis and synthesis which do actually take place when children are learning to read, whatever method of teaching we adopt.

The second element tested in Formal Reading was that of speed. The tentative character of the inquiry is emphasized, though great emphasis is laid upon the value of the "yard-stick" when we know exactly how to apply it. The essence of the tests here applied is the attempt to distinguish between *normal* and *careful* reading. The method consisted in (1) writing from dictation the first part of a simple story of a picture, (2) writing an independent continuation of the story, (3) reading the actual continuation. This third exercise was interesting to the pupils as it concerned a problem on which their own minds had been at work in (2). The class began to read this passage at the same moment, and at the end of a minute the pupils were told to put a circle round the last word read. This gave a measure of "Normal Reading." A test followed, in which the pupils were asked whether or not certain words occurred in what they had read.

Later, they were given the third part of the story to read, with the instruction to read carefully in order to be able to reproduce what they had read, conditions of time, &c., being the same as before. This gave a measure of "Careful Reading."

As a general result, the "yard-stick" suggested for reading runs as under:—

A child in Grade	IV	V	VI	VII	VIII
should be able to read simple	} 160	} 180	} 220	} 250	} 280 words per minute
prose at the rate of ... ..					

and to reproduce 50 per cent of the ideas in a 400-word passage after one reading. How this last point was determined is not stated.

It was found that 97 adults gave a standard of 320 words per minute. These standards are for normal reading as previously defined, and they are based upon the median of the groups examined, not upon the average.

Mr. Courtis is very emphatic about the use of standards of this kind. He suggests, for example, that the pupil who has reached the standard rate should be excused any further drill in reading, and that the amount of deviation from the median of the class is an important clue to the determination of teaching efficiency.

(To be continued.)

J.A.G.

## TRAINING COLLEGE ASSOCIATION (London Branch).

### THE PARENTAL VIEW OF THE SCHOOL.

A MEETING was held of the London Branch of the Training College Association on March 10th, at Stockwell College. During this year the London Branch is trying to collect some information on the opinions of the general public on the question of how the Elementary School is fulfilling its function, and at this meeting the point of view of the working-class mother was put. Information was obtained in two ways: a questionnaire was circulated among those members of the Branch who could get it answered by working-class mothers, and three speakers of very wide and varied experience gave the result of their own knowledge to the meeting. These speakers were Miss Croal (Assistant Inspectress of Boarded-out Children, L.C.C.); Mrs. Brown, a working woman who lectures and works for the Women's Co-operative Guild; and a representative of the W.E.A., also a working woman. Help was very kindly given by the University Settlement at Bristol, where some eight members of the School for Mothers answered the questionnaire.

It is proposed to deal first with the questionnaire. It is necessary to state that only thirty sets of answers were sent in, but that the three speakers, who came into contact with many mothers during their work,<sup>1</sup> gave the meeting the same

<sup>1</sup> Mrs. Brown definitely stated she had talked to hundreds of mothers in her time. She lectures for the Women's Co-operative Guild.



conclusions as one draws from reading the answers. It is impossible to give all the answers in full, so I have in each case given the usual answer and noted any exceptional one.

- (1) Have you found that going to school has made your children more or less  
(i) obedient, (ii) tidy, (iii) truthful, (iv) helpful at home?

It was difficult to get this question answered. But with one exception those who did answer (15) said the children became more "manageable" and tidy once they went to school, but not more mannerly. One said the girls grew more helpful, but though the boys learnt "to mend things," they made "such a litter" that they were more bother than use.

(2) Do the children *read* in their leisure time? If so, what do they read? Everybody agreed they read a great deal—the younger children, fairy tales; the older, books of adventure. But eight mothers, who were interviewed by another working woman, were unanimous that the children only read trash, and one deprecated the habit of children exchanging rubbishy books among themselves.

- (3) Do you find that their lessons in cooking, needlework, or laundrywork make them useful at home?

(a) Cooking. All say it is helpful, though most agree it is too extravagant for working people—especially the recipes for pastry and cakes.  
(b) Needlework. The cutting-out is useful, but nearly all say there is not enough mending and too much fancy-work.  
(c) Laundry. The answer varied greatly. One mother said it was taught so well that her girl (aged 12) could do the washing for the house; most liked them to do it at school, but would not let them try it at home. There was a good deal of adverse criticism, but the reasons were not very clear—"waste of time," "fussy," "not useful," &c. All seemed to think it better than it used to be; many complained the children forgot it as soon as they left the classes.

- (4) What do they tell about their school life when they come home?

Only the little ones talk much, and mostly about the things they have made or games they play. The older ones only talk if "something special" has happened—a "row," or an inspector's visit.

(5) Do you think they learn useless things at school? If so, what, and why? It was very difficult to get a reasoned opinion from the mothers on this question. In spite of adverse criticism, the general view was, that school was useful because it taught "useful things," as cookery and laundry: "can't grumble at school now" represented many women's view. Iron-work and wood-work make boys handy. All disliked the science: "not gone into sufficiently to be of use," said one. About half state definitely what is being taught is not much use in after life—Geometry and Drawing for example. From one School for Mothers all said children were crammed; and that there were too many examinations.

- (6) Do you hear the children singing songs learned at school, or playing games learned at school?

- (7) Are the children proud of their school, and how do they show it? What are they proud of?

Yes, the children sing and recite; indeed it is often "very wearisome." Again, the younger ones especially do so. Apart from this it was almost impossible to get information from the mothers. They all said children liked school and wearied of holidays. The children are most proud of their prowess in Arithmetic and Hand-work. Most children think their school the best, and "what teacher says is right."

- (8) Are they sorry when they have to leave school, and do they want to go back afterwards?

Most mothers said "No," but that children always wanted to go back to school after being at work for a few months.

- (9) How far does the school help them in their after life?

No general conclusion. Some mothers again stressed the value of manual work.

One mother said they always "remembered and loved school days." Some say school has a good moral effect, some none at all.

- (10) In what ways do you think that school training was better or worse when you were at school than it is now?

Everybody said it was better, but no one would give her reasons.

- (11) Would you like them to remain longer at school? If not, why not? If so, why?

Unanimously No! The general opinion is that Standard IV is the hard standard, and after that, especially the boys get lazy! The poor parents said they must have children home when they are fourteen, and would like them at eleven—or when they passed Standard IV. The better off said, if school age was to be raised the curriculum must be more practical. One mother says, "the children are kept in laziness and won't work."

If we turn to the conclusions the speakers at the meeting had reached, we find Miss Croal and Mrs. Brown gave the same impression that we gather from the answers to the questions, i.e., that many of the questions the mothers do not feel competent to answer, and that they are always loth to give reasons. But

- (1) They highly approve of Infants' Schools, and notice how the children improve there.
- (2) As a class, working women think work in the upper standards of little use, and do not even wholeheartedly approve of the manual work.
- (3) They would strongly resent the increase of school age.
- (4) Though they admire the schools and say how they have improved since their own time, they do still feel, rather than think, there is something wrong. Mrs. Brown suggested that after the children reached Standard IV they seemed to waste time; that there was very little, at any rate, to show for their years at school, and that some sort of vocational training would be more satisfactory. This constantly-recurring comment on the waste of time in the upper standards seems to me the most interesting result to teachers, for nearly all of us value greatly the child's last two years at school. There must surely be some reason for the divergence of view apart from the obvious one that parents in many cases left school too early themselves to understand what the modern teacher is trying to do for the modern child.

The following summary of a discussion on the value of school with the mothers at the Marylebone Mothers' School is not only interesting in itself, but also an excellent summary of what the majority of intelligent working women seem to think, according to our informants, on the matter:—

"They all think schools are improved since their time. The lessons are much more interesting and more practical, and more interest is taken in the children. They all praised the Infants' Schools very highly, and say the babies come home full of what they have been doing. They do not think school made much difference in the children's character as to disobedience, truthfulness, &c., and several complained that their manners get worse. They do not think it worth while children staying beyond the age at school, as, if they were dull, it was no good troubling them further with books, and if they were bright, they had probably reached the top of the school, and only went over what they had already learnt, or did messages for the teachers. They think if a child's brain is good enough to be an asset he should gain a scholarship, and go on to a higher grade school, and the others might just as well leave. They seem to value any education beyond the most elementary as merely a question of adding to its wage-earning powers. If a child is not up to Scholarship standard it were better to train him as a plumber or something else."

N.C.

## OFFICE

FOR THE USE OF OVER-CONSCIENTIOUS SUPERVISERS  
DURING SCHOOL PRACTICE.

PAX VOBISCUM.

*To be said on the way to the School :*

I shall ever try to keep my body in health, knowing that a sick critic maketh a sore student.

I shall ever try to keep all terse expressions and every taint of epigram from my lips, knowing that these the harassed student cannot endure.

I shall ever try to limit my comments to two, or, if it may be, to one, knowing that a third driveth out his brethren.

I shall ever try with each disparagement to link a counsel of success, knowing that thus only is there hope of betterment.

I shall ever try to respect my colleague's notice, and to refrain myself from removing my colleague's pin, knowing that the injury is heavy and that for it there is no redress.

And it shall be my endeavour with a firm heart and a peaceful conscience to return at middle day, knowing that so only shall I have power to endure to the end.

*To be said, with an act of self-control, during the morning :*

She that doeth least, doeth least harm.

*To be said, with an act of self-righteousness, during the afternoon :*

That which is done, is done, and well done.

## REVIEWS.

What is Education ? By Ernest Carroll Moore. Ginn & Co.

THE freshness and vigour of this book are in striking contrast with the weary title it bears. Perhaps Professor Moore is not aware that we in England ought to know what education is, for has not our own Mr. Stanley M. Leathes asked and answered the question in his recent book under Dr. Moore's title, *What is Education ?* Besides, Professor Welton has last year answered practically the same question in his *What do we mean by Education ?* One cannot avoid the uneasy feeling that perhaps after all Professor Moore does know about these books, and still thinks that there is room for his further answer. We must not forget that we have high literary authority for the statement that education is a subject without end. In any case, readers will welcome this stimulating treatment of an old subject. Professor Moore is no stickler for pedantic distinctions, and indeed shows very clearly how the definition fetish has lost most of its virulence in these dynamic days. He tells us that one of the great functions of education is "choosing experiences for people," and his readers cannot but thank him for the experience he has chosen for them by putting this book in their way.

Socrates and Plato are the preferred authorities in the volume, but the reader need have no fear of a consequent ancientness in its pages, for the two Greeks are balanced by two Americans. There is nothing behind the times in what has the backing of Professors Dewey and Frank McMurry. But truth to tell, none of his authorities count for anything like so much in the book as Dr. Moore himself. The man who beat a violent press attack in California, and got the better of the



reactionary educational authorities of New York, is not likely to depend on others for his motive power. He is a most aggressive writer, in the American sense of that adjective, which, as Englishmen are beginning to realize, conveys a high compliment. He brings a fresh eye to all the old problems. He challenges the claims of Graves and others to have discovered in Plato the germs of the Formal Training fallacy, and makes capital play with Plato's statements on the educational value of Geometry. He cannot tolerate the increasing tendency towards a learned obscurity in educational theory. His attitude towards the arcana of our subject may be gathered from his approval of the French mathematician's view "that a given scientific theory cannot be said to have been perfected until it is comprehensible to the man in the street." It cannot honestly be claimed that the whole of these 350 pages have reached this degree of comprehensibility. In England, at any rate, the man in the street is not yet educated up to the point of reading with intelligence a technical work of this kind; but, at any rate, no teacher, not to say trainer of teachers, will be repelled by factitious difficulties in its pages, while all will feel that its author has kept very close to the things that matter, and has at the same time contrived to give his readers the maximum amount of pleasure that is consistent with serious work.

The book appears at the first glance somewhat discursive, but if the reader is called upon to analyze out the main thesis, he will have no difficulty in discovering that the relation between knowledge and education is the central problem of the book. Dr. Moore seeks to correlate the inner world with the outer. The result is the best bridge that has yet been found to enable us to pass from the "big, blooming, buzzing confusion" of infancy to the ordered cosmos of the educated adult.

J. ADAMS.

### BOOKS RECEIVED.

**School Hygiene.** By Leo Burgerstein. Translated by B. L. Stevenson and A. L. Osten. (xix+188 pp.) Harrap. 3/6 net.

[A very welcome translation of the smaller edition of Dr. Burgerstein's great work. From the teacher's standpoint, it is easily the most useful book of the kind. The mass of quasi-medical information which usually appears is omitted, and instead we have more than one-third of the book devoted to the Hygiene of Instruction, in which such pedagogical problems as the length of lessons, the length of the recess, the hygiene of reading and writing, co-education, and the like, are discussed in an informing way—informing because there is provided always a background of verifiable evidence, a notorious defect in much educational literature.]

**Youth, School, and Vocation.** By M. Bloomfield, with an introduction by Henry Suzzallo, Ph.D. (xi+273 pp.) Harrap & Co.

[The many-sided activities of the teacher as social worker include nothing of greater importance than that of vocational guidance. "Timid schoolmasters, held hard and fast in the clutch of their craft habit of teaching from a book, shutting their eyes to the consequences," are apt to be frightened by it, but if they are to rise to the wider call which modern democracy makes of them, they must not let this function slip into alien hands. They may, and should, be helped in the work by a central bureau whose business it is to collect information about openings and careers for boys and girls, but the schoolmaster who knows his boys thoroughly, and who identifies himself with their interests, is the person who can most effectively guide. Mr. Bloomfield's volume is a valuable study of this kind of service. He tells what is being done in some cities in Great Britain, Germany, and the United States. Much leeway needs making up in our own country, if a serious attempt is to be made to deal with a problem of great social importance.]

**The Cambridge Book of Poetry for Children.** Edited by Kenneth Grahame. Part I (xii+117 pp.) and Part II (vii+126 pp.); each 1/- net. Cambridge University Press.

[The name of the editor excites great hopes in such a connexion. Surely nobody knows children better or loves them more than the author of "In the Golden Age," and we naturally expect him to give us an ideal anthology. Perhaps a



certain disappointment was inevitable under such circumstances, for it does sometimes seem as if the perfect taste of the editor had overcome the fundamental principles which should find expression in the choice of children's verses.

Mine be a cot beside the hill ;  
A beehive's hum shall soothe my ear ;  
A willow brook, that turns a mill,  
With many a fall shall linger near.  
  
The village church among the trees,  
Where first our marriage vows were given,  
With merry peals shall swell the breeze,  
And point with taper spire to Heaven.

Beautiful as this poem is, shall we call it a poem for a child or for middle age? "Kilmeny," again, even when abridged, is, perhaps, not a child's poem; and what of Wordsworth's "Recollections of Early Childhood"?

But criticism is much easier than selection. However competent and talented an editor, he will not expect to win approval for everything he has admitted. One wonders whether a less strict demand for the "divine spark" might not have given children a still better introduction to the delights of poetry. The two volumes are admirably bound and printed. They are also inexpensive enough to make a large sale as possible as it is desirable.]

**Ships, Shipping, and Fishing.** By G. F. Bosworth, F.R.G.S. (86 pp.)

**Trade and Commerce.** By A. J. Dicks, B.A., B.Sc. (94 pp.)

**Factories and Great Industries.** By F. A. Farrar, B.A., B.Sc. (90 pp.)

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## THE THEORY OF REPRESSION AND CHARACTER.

BY ISABEL LAWRENCE, M.A.

"SHOULD we take lightly," asks Freud, "the ethical significance of the suppressed wishes which, as they now create dreams, may some day create other things?"<sup>1</sup>

This enquiry is not followed up by Freud, but the ethical significance, not only of suppressed wishes, but of the whole theory of repression, and the censor or critic in mental life, is, as he suggests, a most important one.

The censor is a centre of control in consciousness; it initiates and guides the workings of repression in psychic life, and we are told by Freud that the censor is "the guardian of our psychic health."<sup>2</sup> Yet the method of psycho-analysis itself shows us that this last statement is not universally true. For the method consists in tracing the associations and connexions aroused during the examination of the given mental state. The subject of investigation is led to express freely everything that occurs to him during the analysis; however arbitrary and disconnected some of his ideas may appear, he must endeavour to give up as completely as possible the inner working of his mind and evade the censor.

The clear statement and description of his psychic activities brings up hidden motives, suppressed wishes, and explains absurd connexions, and apparently incoherent associations. When, as a result of such a psycho-analysis, the subject approaches a clear understanding of his own mental activity, he is, if he is neurotic, at least on the way to release from mental disorder. Psycho-analysis is, indeed, a technical expression of, and its method a practical carrying out of, the command, "Know thyself." That the realization of error and explanation of symptoms should have beneficial results in the case of nervous disease is self-evident, and in this case the evading of repression is advantageous.

The theory of repression has application to normal everyday life, and its effects there may be considered in connexion with character. But first, for the sake of clearness, we may discuss briefly the meaning and motives of repression.

In "repression we recognize the infantile first step of passing adverse sentence and of rejecting through reason."<sup>3</sup> Freud assumes a primitive psychic apparatus where wishing merges into hallucination. The latter does not satisfy the wish demands, and so a more expeditious secondary activity develops. The secondary activity controls volition, and the practical expression of desires in the outer world. This secondary process covers the primary one in the sense both of concealing and subduing it. Freud does not, of course, imply that in actual fact there is a psychic activity possessing only the primary process. The two processes are always present; the secondary process, however, develops gradually and more completely with the development of the individual. The motive for repression is already implied. The secondary processes effect actual fulfilment of desires, and so inhibit the impractical.

What is the impractical? It is what causes pain, and also what fails to adapt itself to the innumerable conditions of fulfilment in

<sup>1</sup> *The Interpretation of Dreams*. By S. Freud, p. 492.

<sup>2</sup> *Ibid.*, p. 448.

<sup>3</sup> *Ibid.*, p. 479.



practical life. The hedonic motive and the "reality" motive may overlap in repression. Professor E. Jones's expression of the latter, the non-adaptive motive, in terms of utility is suggestive. According to his view what is irrelevant and uneconomical in mental life is rejected from consciousness. The utility motive will explain much of the working of repression in ordinary life. Repression from this point of view may be due to circumstances, lack of opportunity for experiencing certain tendencies; they are useless and therefore not permitted to invade consciousness. For instance, Mr. H. G. Wells has told us that the gaiety and good humour of the British soldiers at the front may be largely due to release from the strain and pressure of monotonous, continuous, and arduous toil in workshops and factories. In this case "repression" has had an obvious utility, for to what end could the individuality in the circumstances of the factory expand in laughter and good-natured, helpful activities?

At the same time, we see that repression may work for ill in individual character. The soldier in the shadow of death is a bigger personality and nearer the "truth breathed by cheerfulness" than the repressed factory hand.

Again, the utility motive for repression helps us to understand certain types of character. The very conventional type of habit morality is an example of utility repression. In this case, through feebleness of practical initiative, mental indolence, and social pressure we should get repression. The impulses repressed may be in themselves valuable, but not on given occasions appropriate, but repression being a psychical activity naturally follows more easily, channels already marked out, and therefore the impulses may suffer repression subsequently merely from the tendency to repetition which may become habit.

The repressed character is not an unfamiliar type, and repression of this habitual kind may result in very unnaturally, and undesirably, inhibited characters, reminding us of those far off armour-plated creatures that once inhabited the earth, so well protected that they were almost immobile. So the personality may be so narrowed through repression that it, too, becomes comparatively inactive. The Egoist in Meredith's novel is a fair example of unhealthy repression, of all but egoistic tendencies, so shut in that in the end he consciously seeks protection from the invasions of the outer world to whose social claims he cannot respond. A less alarming example of narrowness is the one-time popular, strong, silent man of novels and plays who in real life may be so difficult to distinguish from an inarticulate nonentity.

Repression may be useful, but it is as evidently dangerous to full development of personality. If we consider ways of escape from repression we shall find this opinion enforced. "Everyone knows on any given day that there are energies slumbering in him which the incitements of that day do not call forth, but which he might display if these were greater. Most of us feel as if a sort of cloud weighed upon us, keeping us below our highest notch of clearness in discernment, sureness in reasoning, or firmness in deciding. Compared with what we ought to be, we are only half awake. Our fires are damped, our drafts are checked. We are making use of only a small part of our possible mental and physical resources."<sup>1</sup>

<sup>1</sup> *Memories and Studies*. William James; page 237.

This is true for every individual. The great moral genius is he who is able to draw upon those hidden forces, and to utilize his unused energies and escape repression. In daily life the strong, reliable character, and the attractive and serene personality, belong to just those individuals who impress us by their power of continuous initiative and resource. They seem to tap an inexhaustible inner stream of energy and ability that pervades their personalities and actions, and creates an atmosphere of living force by which their less gifted fellows are strengthened and inspired, for their unfailing store supplies others as well as themselves. These happy souls are never undone or wearied by circumstance. In the midst of disaster the strong character retains his strength, the radiant personality still shines unshadowed; they cannot be betrayed, for their strength is within.

The most familiar method of escape from repression is, perhaps, the "mystic" way. This has been a way of release to unconscious and subconscious influences and tendencies which in the ordinary person are most emphatically repressed; but the mystic reaches a higher and wider state of unity in character and consistency in action.

The repressed type of character may have many of the advantages of self-control, but he has also the disadvantages of narrowness and a limited outlook.

It is clear that by lowering the threshold of repression we may read a freer and completer personality. The sum of psychic energy is probably not inexhaustible, but repression may reduce, and escape from repression augment that sum.

Conversion is the opposite activity to psychic repression. In conversion we get release from evil and a corresponding expansion of ideals and activities. "I was loosed from affliction and irons," says John Bunyan, in describing the effect of his discovery of the grace and love of God. It is significant that conversion occurs most frequently in the years of adolescence. For at this time, because it is one of great change and mental and emotional development, repression has less influence, and is more easily disturbed and overcome. A slight consideration of mystics and converts brings home to us the fact that the changes that occur in this experience result in unity and reconciliation in character. And the attainment of unity and reconciliation in mental life is necessary not only to stability and serenity, but also to an enlightened understanding of and sympathy with others. Repression and resistance may obviously work against such attainment. It may be possible to be consistent and strong through rejection, but the dangers of the disturbing and weakening effects of suppressed emotions and inhibited desires are very real. Even if these do not end in disorganizing character through dissociation, yet repression must too frequently waste energies in conflict and reduce personality. Who would choose the resulting narrowness and hardness? The path of union and reconciliation is a saner and safer one.

The vitalizing and unifying of consciousness through aesthetic contemplation suggests interesting comparisons with ethical activity. M. Bergson describes the state of aesthetic contemplation as follows:—

"The object of art is to put to sleep the active or rather resistant powers of our personality, and thus to bring us into a state of perfect responsiveness in which we realize the idea which is suggested to us, and sympathize with the feeling that is expressed. In the processes of art one finds in an attenuated, refined, and somewhat spiritualized form the processes by which one usually obtains the hypnotic state."<sup>1</sup>

<sup>1</sup> *Time and Free Will*, p. 18.

This account persuades by its accuracy and reality, yet it is only half the story. For in such moments of aesthetic enjoyment, when the resistant powers are asleep, we know through experience that mentally and emotionally we are tremendously active and awake. We are capable during such moments of an all-embracing understanding and sympathy. And this exaltation of faculty and power that occurs in conversation, mysticism, and æsthetic appreciation is due in great part to the sinking of repression so that we catch a glimpse of our own unrealized and untouched reserves and resources. The effect of such a realization of a fuller and wider life is hardly ever merely temporary.

In the *Psychopathology of Everyday Life*, Freud deals, though more or less indirectly, with the relation of repression to the ethics of ordinary life. His main purpose here is to prove that failure of memory and error are due to repression. We repress, in fact, by forgetting what is painful, inconvenient, or troublesome. And "back of every error is a repression." Our mistakes, indeed, indicate a repression which is only partly successful; the repressed material escapes complete control and invades consciousness, and we express the incomplete control by some erroneous response in the external world, for instance, by verbal or written slips of tongue or pen, or by what appears to be clumsy, ill-directed, or unnecessary action.

Few of us are quite unaware of these facts which daily experience confirms; fewer still, perhaps, would deny that in much of our forgetfulness repression plays anything but a moral part, but on the contrary panders to indolence, and backs up selfishness and insincerity.

And this suggests a further value to the method of psycho-analysis. We are not concerned here with that method in relation to nervous disorders; its value in that connexion has already been fully demonstrated by experts. Repression, we have seen, in normal life tends to narrow character, may inhibit good impulses, and diminish our powers, and, on the other hand, encourages an egoistic indifference to the claims of others so often evident in our forgetting, and create an inner division and insincerity which is not less dangerous because we remain unconscious of it. For it is better if we sin to sin consciously; "to know the better and follow the worse" indicates a healthier attitude of mind, and one nearer the possibility of regeneration, than that possessed by the individual whose ill-doing springs from repressed, unconscious motives.

Sometimes evil-doing itself is morally more advantageous than a repressed condition in which activity is inhibited. For as a consequence of the evil action the individual may become aware for the first time of his own tendencies and weaknesses; their expression then will not only relieve him of a burden caused by a repression which consumes his energies, but will show him the road upon which he is travelling, and how little he is his own conscious guide and director. The evasion of repression thus reveals him to himself; in face of the actual deed he can no longer deceive himself nor deny his responsibility. The self-knowledge that inevitably results must lead to a clearer understanding of his inner life and his own potentialities, and may bring about an endeavour after fuller unity and a wider control. Psycho-analysis is not only a method of cure for mental disorder, but its application in some degree is a means of mental health for us all. It is only through self-knowledge that we can measure our strength and weakness, and realize our capacities, and it is only our ability



to do this that can make us effective in action. Self-knowledge, too, provides the right kind of repression, for it will induce the restraint demanded by our understanding of our own limitations. And not least, it will reduce, if not destroy, the internal subterfuges and dishonesty of character that are the fruit of concealed motives.

"Perhaps," says Freud, "it is a result of my occupation with psycho-analysis than I can scarcely lie any more."<sup>1</sup>

### THREE SIXTEENTH CENTURY THINKERS.

By GERALDINE E. HODGSON, Litt.D.

IT is a Sisyphean task to persuade English people that the History of Education either exists or matters if it does exist. Perhaps the term is badly chosen. What exist are ideals of education: what matters is that, as many of us as possible should not only know about them but appreciate them, and bestir ourselves to make an eclectic use of them.

It is the idlest of criticism, though the suggestion may not seldom be heard, that we are modern men, and that a barbarous past—which, by the way, was not always barbarous—has no concern for us. It is more untrue than the storied Irishman's complaint that posterity had done nothing for him, and has not even the merit of being funny. No doubt, the study of educational ideals can be made as dull and unprofitable as anything else, if you pitch upon the right person to conduct the business, but, to borrow a phrase from Pestalozzi, "it is a fact of experience" that it can be so handled as to interest intelligent men and women.

The intrinsic interest of the past, and its utility, if wisely used, to the present, is sufficient apology for the ensuing representation. To-day in England there is a stir and talk about education: men are arguing for and against "subjects"; they are ready to consider any and every "system," rather over ready, perhaps, to adopt half-tried or untried methods. Committees jostle one another in official places, but as a leader writer in the *Times* Educational Supplement for Sept. 7th wrote—"It may mean very little. The subject of forestry is an instance in point. Twenty years ago there was a great stir on the subject of the replanting of waste lands, and the re-wooding of England. Committees and Royal Commissions were appointed; many admirable and practical reports were issued. Yet when the war came, and the sudden need for wood was felt, it was found that nothing had been done, that not a tree had been planted."

It is impossible not to fear that history may repeat itself, and we shall presently find that in spite of committees and reports "not a seed has been sown" in youthful minds as a direct result of these portentous efforts. The reason in this case will probably be that English public opinion still fails to realize the true importance of the teacher's *function*. Here and there, someone will, like Lord Parmoor in the House of Lords, announce that "the teacher is the pivot of education," and we all say "Oh, yes; of course!" and straightway behave as if it were of no manner of consequence at all. In a country where war economies

<sup>1</sup> *The Psychopathology of Everyday Life*. Freud, p. 253.



begin with closing the British Museum, paring down salaries, suppressing departments and amalgamating offices, the importance of the teacher goes by the board. The individual injustice is of less vital importance than the cumulative effect on the profession. For years able men and women have told themselves that the price of wisdom is above rubies, and have accepted miserable salaries on insecure tenure in the hope of serving the education of the country. But "hope deferred"—the adage is something stale. Yet the nation had better bestir itself, lest it lose from the teaching profession that strain of enthusiastic ability which leavens

. . . "The pig-of-lead-like pressure  
Of the preaching-man's immense stupidity."

But indictments, however relevant, are often more useless than an analysis of causes. What, then, is the cause of our present educational chaos and indifference? Surely, down at the bottom, it is due to our apotheosis of the practice of letting everything slide. We have grown so accustomed to this process that we are blunted to its results; when danger looms, we snatch up any improvised tool, and at last we forget that tools exist for specialized needs, and that some people use each for its own purpose. Nor are we in Browning's case—

"They tell me your carpenters," quoth I to my friend the Russ,  
"Make a single hatchet serve as a tool-box serves with us.  
Arm each man with his axe, 'tis a hammer and saw and plane,  
And chisel, and what know I else?"

It is no plan of making one instrument serve a variety of purposes; it is rather letting everything go, and then in emergency seizing on the first handy weapon, and wresting it from its proper end into the unpremeditated need of the moment.

Possibly some loans from the past, chosen not at random, but with careful knowledge of the present, might avail to help. Ours is and must be what is called a democratic age. The nearest approach to an accurate description of our present state is a condition in which the majority feel keenly, desire fervently, eschew authority (even that of knowledge), and claim to possess and express opinions about everything on earth. It is a state compatible with the continued existence of a minority who do few or none of these things, and perhaps slightly overrate their wisdom in not doing so. It may be an inevitable, but it is a very comfortless and bewildering stage of evolution. The striking characteristic of the day is a vehement claim to individuality, backed too seldom by the presence of conspicuous, still less of original, power.

The sixteenth century also made a great bid for individuality. The Renaissance of learning in Italy, England, Germany, and France, the religious strife throughout Europe, the ripening of the sense of nationality, all contributed to this dream of individual importance. But the two centuries differed in this, that the sixteenth had that definiteness of standpoint and realization of aim which belong to an era of authority, while the twentieth has, through the increasing effect of many generations of unsystematized speculation, lost them.

We cannot put the clock back; yet living at our own time of day need not necessarily presuppose entire neglect of and contempt for the past. The sixteenth century retained a profound sense of function. An interesting illustration may be found in a comparison of book titles. Nowadays we christen a volume *Principles of Education*, or *Studies in Pedagogy*, or, travelling a few miles nearer to despair, *What is*

*Education?* The sixteenth century produced in Cosmopolis, in Italy, in England, three books whose titles were

*The Manual of the Christian Knight.*

*The Courtier.*

*The Boke of the Governour.*

(Machiavelli's *Prince* is in a somewhat different category.) Erasmus's book, whose first title was *Enchiridion*, was the earliest in time of these, issuing "with a new and marvellous profitable preface" from Basle, on the Vigil of the Assumption, in 1518.

*Il Cortegiano*, by Baldassare Castiglione, had been written four years before, but was not published till 1528. Last, came Elyot with the *Governour*, in 1531.

The whole tenour of these books depends on the prevailing point of view of *function*. In the sixteenth century we are not far from the heyday of Sumptuary Laws, when men were expected to regulate their clothes by their calling.<sup>1</sup> So we realize that men, at any rate, if not always women, were expected to have a calling, to fulfil some definite and observable purpose.

Erasmus's *Enchiridion* differs from the other two in its universal application. True, it was, in the first place, composed for one special person, "a certain courtier, a friend of his," and the opening words indicate that it considered his special need:—"Thou hast desired me, with fervent study, singular beloved brother in Christ, that I should describe for thee compendiously a certain craft of virtuous living, by whose help thou mightest attain a virtuous mind, according to a true Christian man. For thou sayest that thou art and hast been a great while weary of the pastime of the court. And dost compass in thy mind by what means thou mightest escape Egypt with all her both vices and pleasures, and be prepared happily with the captain Moses unto the journey of virtue."

And yet, this handbook of Christian living, which we are told could be found on inn tables even in remote corners of Spain, grew beyond its original purpose, and in the "marvellous profitable preface" we see that the great scholar came at last to frame a *vade mecum* for all and sundry, a little volume of sound prescription, easily portable, for "in such a fugitive life it is necessary to have a ready medicine at the hand."

Erasmus never overrates the great mass of men and women, never attributes to them powers they have never possessed: with his occasional bluntness he announces, "There be a great number of fools and simple souls in every place." But realizing the value of reality he reminds these simple souls:—"It is not the noise of thy lips, but the fervent desire of thy mind, which (as it were a very shrill voice) beateth the ears of God."<sup>2</sup> So, in spite of the less than mediocrity of the mass, he makes no restricted appeal: "Yet nevertheless the unlearned and rude multitude which Christ died for ought to be provided for," and again: "Let not this be our study, to appear learned ourselves, but to allure very many to a Christian man's life."

It is worth while to emphasize this point, because although the book is "for everyone," it is true to the century's trend of thought in presenting the matter, the explanations, the precepts, to an *individual*,

<sup>1</sup> In this country most of the Sumptuary Laws belong to the fourteenth and fifteenth centuries.

The last was passed in Scotland in 1621.

<sup>2</sup> *Enchiridion*, chap. ii.

as it were. Erasmus does not call it *Precepts of Christianity*, nor *Principles of the Christian Life*, but *The Manual of the Christian Knight*. It may be that all and sundry are to be knights, but it is the functional character of the individual in the universal struggle after well-doing which is set forth: these people are not expected to be just "good," but to be "knights," each one a person with a well-defined task and duty. The current point of view may well be illustrated by the famous instance of S. Ignatius Loyola. However well we know the facts, they will bear citation once more, and that in a poet's setting:—"Wearying on his painful bed, man of action as he was . . . he asked for a chivalrous romance. There was none such in the stern Basque Castle, so they brought him a couple of pious books—the 'Life of Christ,' by Ludolph a monk of Saxony, and a treatise on the 'Lives of the Saints.' . . . Little such provender liked him, but sick men and prisoners read anything. . . . Beginning listlessly, this new world slowly laid on him its surprise, no less than that Pacific on 'Stout Cortez' in the not too accurate imagination of Keats. The contrast between his own self-seeking—with all its lofty trappings—and the God-seeking of these men, amazed and disquieted him. With amaze grew curiosity, with curiosity interest, and last suggested itself the leading question, put to the ambitious nature of the man, 'Why should not I do as this one or that?' The aspiring soldier had found his true banner, under 'that sweet Captain, Jesus Christ.' With such a man there could be no halting measures. It was to be a change of flags. . . . He began to keep vigils of prayer; and, at last, in one of these nightly watches, before an image of the Virgin, he offered himself as her Son's servant for the rest of his life."<sup>1</sup>

"It was to be a change of flags"—there it is, the "functional standpoint." S. Ignatius, debarred from military chivalry by that ghastly and mishandled wound, could still, true to the sixteenth century ethics, only see himself in the rôle of a soldier.

*The Courtier* of Castiglione is a perfect example of a treatise based on the theory of individual function, which, perhaps, is not remarkable if we reflect that the Italian City State, small and yet with its resident so visible "Court," necessarily developed a different ideal of life from that of the "robber knighthood" of Germany, or the feudalism of France and England, with their castle life; the conditions which Poggio, unpleasant as his own manners seem to have been, denounced as barbarous. Certainly, in Italy, the commerce of those small but highly-developed societies gave birth to that "urbanity" which is so marked a feature of the Italian cities, and tended, so it would seem, to limn function in sharply-drawn outlines. For in Renaissance Italy, individuality, unhampered by prejudices of class or sex, was highly esteemed, and individuality can hardly come to its own apart from specialization of function. Perhaps no more striking proof of this characteristic could be found than Castiglione's observation, after he has described the delights of Federigo's palace at Urbino: "Nor was anything admitted there but what was most curious and excellent in its kind."<sup>2</sup>

The majority of us seem hardly aware of our almost entire loss of this ideal of excellence, of perfect workmanship, of exquisite adaptation to an end. We sacrifice quality nowadays so light-heartedly

<sup>1</sup> S. Ignatius Loyola, by Francis Thompson, pp. 12, 13.

<sup>2</sup> "Nè quivi Cosa alcuna volse, se non rarissima ed eccellente."—*Il Cortegiano*, L.I.



to quantity; we not only tolerate fearful ugliness, and monstrous uselessness, specially the latter, in all kinds of decorative production, but we allow it to be turned out mechanically in van-loads. Yet in that Rebirth, that recovery of learning and taste, which, despite all its later and decadent excesses, was, in its earlier stages, of inestimable worth in the progress of the human race, the enlightened and cultivated Frederick of Urbino had learned his Plato well, and admitted to his surroundings nothing "but what was most curious and excellent in its kind." For the Renaissance princes, scholars, artists, and cultivated women not only read but marked Plato, and learned from him the unique, in-evadable importance of surroundings, as he urged that youth should "dwell in the land of health, amid fair sights and sounds; and beauty, the effluence of fair work, will visit the eye and ear, like a healthful breeze from a purer region, and insensibly draw the soul even in childhood into harmony with the beauty of reason."<sup>1</sup> As time passed on from Plato's day through the Middle Ages the rate and volume of production increased, so the idea of beautiful surroundings began to grow eclectic, till we see the Italians of the fifteenth century searching for perfect specimens, carrying out that maxim which Pater put into the mouth of the priest of Esculapius as he warned the sick youth "to keep ever by him if it were but a single choice flower, a graceful animal or sea-shell, as a token and representative of the whole kingdom of such things."<sup>2</sup> In an era so adept at self-conscious posing as ours, it is perhaps risky to recall Pater's ideal. Yet, something must be done to check wholesale ugliness and shoddy achievement.

Repeatedly, Castiglione disclaims all intention of giving a definite set of precepts for the manufacture of a courtier; not so is personality developed and function fulfilled; but he will, instead, try to convey the drift of conversations "upon the subject among Persons excellently qualified to determine this point,"<sup>3</sup> even though he quaintly admitted of the frequenters of that brilliant rendezvous of courtiers, poets, wits, and musicians, in the Apartment of the Duchess Elizabeth Gonzaga, "that there is in every one of us some lurking Seed of Folly"; and then again, later on, he will undertake to show "what a perfect Courtier ought to be, but not to give directions how he should become one."

Yet he will give some directions in spite of such disclaimers. To general training he attaches much importance: "if men are trained up with good Education they generally resemble those from whom they descend, and often surpass them." Turning to more special directions he emphasizes the need for a courtier to be a master of "all bodily exercises," and for sound scholarship. Count Louis Canossa, replying to Julian the Magnificent, insists, in the grand Renaissance manner, on Learning. With regard to young people he says: "I would endeavour to show them that Letters (which undoubtedly are the Gift of God as a sovereign blessing to Mankind) were requisite, and how much they contributed to the Support and Dignity of Human Life"; and further, "I return again to our Courtier, whom in Letters I would have to be more than moderately instructed, especially in what they style Polite Literature, and to understand not only the Latin Tongue but the Greek." The scholar is even counselled to "resemble his Master, and if possible to be changed into him." But then what "Masters" they had in the golden hours of that Italian prime!

<sup>1</sup> *Republic*, iii, 401.

<sup>2</sup> *Marius the Epicurean* vol. i, p. 38.

<sup>3</sup> *Il Cortegiano*, L. 1.



Yet, immediately treading on the heels of this advice about imitation, comes the old insistence on individuality: "One general Rule appears to me superior to all others in relation to the Words or Actions of Men; which is to avoid, as much as possible, as a Rock on which there is great danger of splitting, too much Affectation," words which Castiglione records as uttered by Count Canossa. He returns to the matter, in Book II, this time quoting the not less emphatic counsel of Federigo Fregosa: "First then, as what is of the greatest importance, let him (agreeably to the Count's prudent Advice yesterday Evening) avoid all appearance of Affectation." It is in the interests of the other side of this plea for individual development for the sake of perfect performance of function that the Count pleads later for a recognition of personal limitations. As it is essential to avoid affectation, to be one's real natural self, without pose or borrowing, so is it, one might say, a pre-essential to *know that self*: "There is one lesson which I would especially imprint on the Mind of our Courtier, which is this, to be constantly upon his Guard in this and all other Cases; and to be rather diffident than forward, and to beware of persuading himself that he understands what he is entirely ignorant of."

Federigo Fregosa returns to this point, too, in the second Book, and synthesizes the debt to one's self and one's loan from others in the following advice, which, perhaps, reaches further than its modesty of expression at first suggests: "Everyone therefore should know himself, what his Abilities are, and act agreeably to them, well weighing what he ought to imitate and what to decline." It sounds so simple, yet, if it were carried into complete effect, let us say throughout the whole extent of the British Empire, a revolution in life and happiness, in performance and even in capacity, or at any rate in its development, would have been effected too great for most of us to begin even to grasp or realize.

The point is that while this was the ideal—very likely never realized, which is the *esse* of ideals—of the sixteenth century, we now do not even aim at it; we muddle between one half-visualized plan and another till the net result issues in absence of all consciousness of any defined system or aim at all. Life becomes all rough edges, and performance, growing in quantity, dwindles in quality. No brief consideration like this can possibly convey the stimulus of Castiglione's great book, but enough, perhaps, has been written to suggest its value to us of the twentieth century, its value of insisting on development of individual capacity, not solely nor even primarily for self-satisfaction, but for perfection of function; its emphasis on the individual contribution due from each, and, as a logical consequence, on the obligation to develop and polish capacity in some one particular direction; a theme never more vitally apt than it must become in the near future when resettlement after the European upheaval shall be at last not only necessary but possible.

*The Governour* of Elyot was not only the latest in date of these three sixteenth century classics, but, in some ways, is the most germane to our present needs.

It used to be the fashion to regard Ascham as our first great educational writer, Hobbes as the Father of English Political Science, and Adam Smith as the earliest of our economists. But long-forgotten though now recently exhumed Thomas Elyot, once Clerk of Assize,

and then Ambassador (unpaid as he complained) to Germany, preceded them all, and crowded into this one neglected little book an abundance of wisdom on matters connected with Education and the State. Though his object in writing, as he himself declares in the *Proheme*, is "to describe in our vulgare tunge the fourme of a juste publike weale"; yet, true to the trend of his era's thought, he gives it that individualistic turn which attracted great minds then by calling it *The Governour*. He gives his reason: "For as moch as this present boke treateth of the education of them that hereafter may be deemed worthy to be governours of the publike weale under your hyghness . . . I therefore have named it *The Governour*." Just precisely as Erasmus would present Christianity, not as the occupation of a mass of un-localized men and women, or as a philosophy for no one in particular, but as the equipment and manual of instruction for a definite person, the Christian Knight; just as Baldassare Castiglione did not pen a vague treatise on chivalry or culture, but on an individual, *The Courtier*, so Sir Thomas Elyot, descanting on "the fourme of a juste publike weale" deliberately chooses to put it in the shape of counsel for a chosen character, the Ruler. It is once more the concrete, visualizing, precise taste and quality of the sixteenth century, so vivid, so set on *la chose vue*, so averse to muddleheadedness, so inimical to blurred outlines and confused divisions.

Like his predecessors—Plato in the construction of a Republic, and Quintilian in the making of an Orator—Elyot quickly perceived that education comes and must be treated first. And so Book I of *The Governour* ranks as our earliest treatise on Pedagogy. Many a man before him—Bede, Aldhelm, Dunstan, Alcuin, Ethelwold of Abingdon, with the "Gramer-Masters," John Cornwaile and Richard Penriche, and many an unnamed man and woman in religious orders—had taught; but Elyot is our first systematic writer, at any rate so far as our exhumations in the History of Education have yet gone.

He desires a class of governors as distinct in function and performance as ever were Plato's "guardians of the State":—"Hit appereth that god giueth nat to every man like gyftes of grace or of nature, but to some more, some lesse, as it liketh his divine majestie."<sup>1</sup> And then follows, in reasonable sequence, from this apportionment of various gifts, the necessity for various *estates* in a Commonwealth. The governors are to be those "which excelle other in this influence of understandyng, and do imploye it to the detayning of other within the boundes of reason."<sup>2</sup>

With economic flair, he perceives that this most essential occupation is not *directly* "productive." Though the State must be governed, and though in the absence of government all industrialism would be ruined by strife, yet in itself the work of the Legislature and Executive does not produce material goods, so he concludes: "Unto men of suche vertue by very equitie appertaineth honour, as theyr juste reward and duetie, which by other mennes labours must also be maintained according to their merites"; which is but a roundabout way of stating the familiar fact that national revenue, rates, and taxes do not fall from Heaven, but issue from the toil of directly productive labour, past or present. Elyot insists that without "order" there can be no "fourme of publike weale," and that "order" involves different estates of men; in other words, the equation of individual capacities to the varying needs of the State, so that every one contributes to the

<sup>1</sup> *The Boke of the Governour*, Book I, chap. i.

<sup>2</sup> *Ibid.*

whole that tiny part of which he is capable. Treatises on Political Science have jostled each other since Elyot's day, but it may be doubted whether any other English writer has set forth more picturesquely and irresistibly the various functions of individuals, their mutual necessity, their incapacity for interchangeableness, mingling or confusion, than he has thus :—"Nowe to conclude my fyrst assertion or argument, where all thyng is commune, there lacketh ordre; and where ordre lacketh, there all thyng is odious and uncomly. And that have we in dayly experience; for the pannes and pottes garnissheth wel the kitchyn, and yet shulde they be to the chambre none ornament.<sup>1</sup> Also the beddes, testars and pillowes besemeth not the halle, no more than the carpettes and kushshyns becometh the stable. Semblably, the potter and tynker, only perfecte in theyr crafte, shall littell do in the ministration of justice. A ploughman or carter shall make but a feble answer to an ambassadour. Also a wayner or fuller shulde be an unmete capitaine of an armie, or in any other office of a governour. Wherefore to conclude, it is only a publike weale, where, like as god hath disposed the saide influence of understandyng, is also appoynted degrees and places accordyng to the excellencie thereof."<sup>2</sup>

Though it is easy to urge that the governor may want knowledge as well as understanding, and that Elyot attributes to the gift of God part of that which belongs properly to the work of education, and though some of us may feel (certainly in the light of recent events) that Elyot underrates our national versatility, as much as our common practice emphasizes the inclination to use any unspecialized tool for the most specialized work, still, the whole drift of his book is towards insistence on the development of the individual for his due place in the State, a principle we need so urgently to plead to-day.

It is true that of all possible functions Elyot chose only one for discussion, the lot of the Governor. It is the irony of fortune that this one should, by the turn of modern life and thought, have become the least specialized of all. For, as we follow him through the long preparation of the individual whose function it is presently to be to rule, to take his direct share in the work of government, we realize that nowadays this duty falls on an ever widening but not an ever more trained body of people. We have so many governors now; in the immediate future that number may be greatly increased.

And so, Professor Foster Watson in his Preface to the popular edition of *the Governour*<sup>3</sup> hits the nail squarely when he writes:—"It is therefore as necessary, politically, to-day, to take steps to have an educated democracy, as in the Tudor time it was necessary to have an educated Monarch," and, we might add, educated statesmen to assist him. It is this fact, of the extension of the franchise, and consequently, of the need for extended knowledge of political science, which makes this little book so well worth recalling to the public attention. But though all things may seem possible to the light-hearted optimism of a Preface, Professor Foster Watson doubtless knows as well as any of us, how profoundly difficult any training of the masses in general political science is. It is easy enough to lead crowds astray with the pleading of party politics, but to instruct them in the science and art of the *πόλις* is another and less easy matter. In spite of all our pedagogical apparatus and platform talk, those of us who have had first-hand experience in the region of education know that not all have the ability

<sup>1</sup> How far those have travelled from Elyot who adorn their halls with copper bed-pans, and elevate their kitchen dressers with its contents to the drawing-room.

<sup>2</sup> *The Boke of the Governour*, Book I, chap. i.

<sup>3</sup> *The Boke called the Governour*. Everyman's Library. J. M. Dent & Co.



or the desire to be educated, and that some of those who have are cruelly hindered by material obstacles.

Every lover of his country and his kind will applaud Professor Foster Watson, when he magnificently declares that "No education is too good or too great for the Governors of to-day—viz., for the community at large."

How can it be done? A glance back at these three books of the sixteenth century may furnish the answer, or some idea of an answer. From all these we may recover the notion of individual function in the community, we must each, in Elyot's vivid words, be content to be "panne" or "potte," "carpette" or "kushshyn," according to our capacity. Then, borrowing from Erasmus, we must add to our individually functional equipment, the training of the Christian Knight, and borrowing from Elyot, we must supplement it with some knowledge of the science of the State.

The inspiration, then, of these books is singularly practical. In the future, education must train, or must aim at training every child according to his capacity to fulfil some function; we must abandon the notion that people will come into their own although we prepare them at random without foresight or special care. Also, whatever it drops out of the curriculum, the elementary or secondary curriculum, it cannot afford to omit religious training; and, even were it at the cost of some mental arithmetic, it must for the nation's sake include a modicum of information and training in the growth and organization of the State.

The object of the foregoing pages is not literary pleasure, but a practical plea for an alteration in outlook.

This plea for development of individual capacity, in order that function may be fulfilled can be amply justified by an appeal to the facts of our present environment. Nothing can have been much more painful during the Great War than the exhibition in the political world of the subordination of the country's safety to vested and personal interests. In the industrial world the scene is not otherwise. Plutocrat strives to become super-plutocrat; economic rivalry outweighs the welfare of the community; class works against class; and the work-people, deprived of powers they should possess, wreck production and sterilize the country's life by strikes, and rumours of strikes. Nor is even the world of learning, research and education immune from personal and sectional self-seeking.

The want of used foresight lands innumerable young men and women of every class in Society in uncongenial spheres of work; round pegs in square holes abound; while insincerity reigns everywhere. There is no *weighing* of the future needs of the State, no due and widely-applied estimation of the probable capacities of the coming generation; there is little or no care for exquisite workmanship, not merely in the region of Art proper but of all production and manufacture, there is a hungering after material pleasure and comfort while the intangible concerns of the mind and soul of men and women are at a discount. It issues at any rate in great part from the neglect of this double ideal which, despite all its later defects and excesses, the Renaissance enthroned, viz.: the development of the individual for the community; the insistence on discovery of individual capacity that, being unearthed, it might be polished and perfected, to the great benefit of its possessor, and, all alike both sexes and every class being developed along their several lines, to the eventual accomplishment of the harmonized requirements of the Community.



# CLASS RECORDS IN ARITHMETIC.

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THE following system of class records and graphs is the direct result of the discussion of errors in arithmetic which appeared in the June number of this Journal. The object of keeping the records is to show the progress of the various classes, and that with as little additional work to the teachers as possible. The record of a class of children aged 9-10 years is given.

	8-x-15		15-x-15		22-x-15		29-x-15		5-xi-15		12-xi-15		19-xi-15		26-xi-15		3-xii-15		10-xii-15		17-xii-15	
	W	%	W	%	W	%	W	%	W	%	W	%	W	%	W	%	W	%	W	%	W	%
+	4	12	7	20	7	19	8	22	2	6	7	20	9	24	7	19	6	16	10	28	6	
-	3	9	6	17	4	11	4	11	6	17	6	17	9	24	7	19	4	11	5	14	6	
×	3	9	3	9	7	19	2	5	6	17	5	14	10	27	8	22	7	19	11	31	9	
÷	7	21	16	46	8	22	10	27	6	17	3	7	16	43	19	51	12	32	8	22	8	
Total	17	12.5	32	23	26	18	24	16	20	14	21	15	44	30	41	28	29	19	34	24	29	

In the first column under each date the number of sums wrong is noted; in the second is the percentage of number wrong to number of sums done. Such a record takes little time to fill up each week, and its usefulness is obvious. To pass from such a record to graphing the results is a natural step; and in the graph, variations are more easily grasped. In the following discussion the "percentage" errors are graphed.

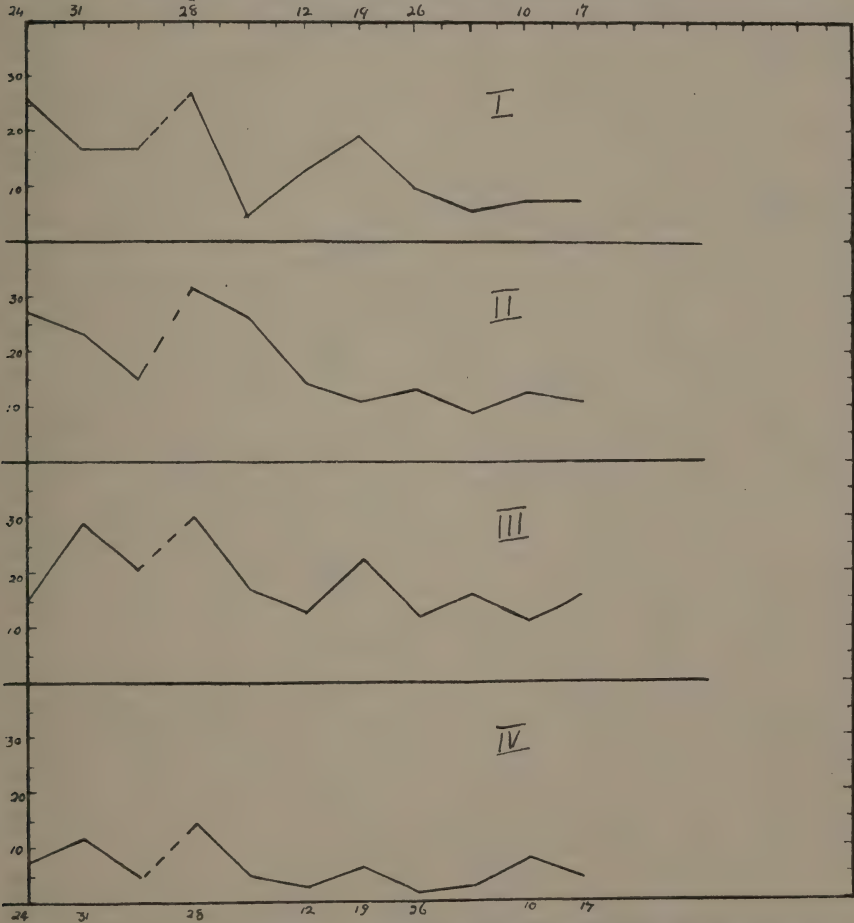
The first series of graphs, Nos. I-IV, is a record of the errors in arithmetic of children aged 7-9 years for the period 24th March, 1914, to 17th July, 1914. The variations in the subtraction graph, No. IV, are not great, which indicates that the teacher had this in hand. The addition graph, No. III, is not so steady, though towards the end of the period the class seems to have been working well. This steadying down as the period advances is well seen in the division graph No. II. In the multiplication graph the same shows; the steadying has taken a little longer to effect. But for the rise in the addition graph, III, on the 19th of May, the settling down of the class to steady work in the various types of sums is in the order: subtraction, addition, division, multiplication. One would have been inclined to predict this order with a possible interchange of multiplication and division. The difficulties of division, however, had been carefully prepared for, and this would account for the order as shown.

In addition to this steadying of the graphs towards the end, another satisfactory feature of the series is the general tendency to fall, thus showing a progressive diminution of errors.

The rise in all the graphs on April 28th calls for comment. The test on the 28th was the first after Easter holiday, which extended from 10th April to 21st April.

In the next series, Nos. V-VIII, two sets of graphs are shown. The lower is that of sums wrong in one figure only. The addition and subtraction graphs, Nos. V and VI respectively, are quite good; there are no great variations; there is a downward tendency; and the upper limit of error is 28%. The rise in the subtraction graph on November 23rd can be accounted for by the introduction of the 0 and 9 difficulty. The

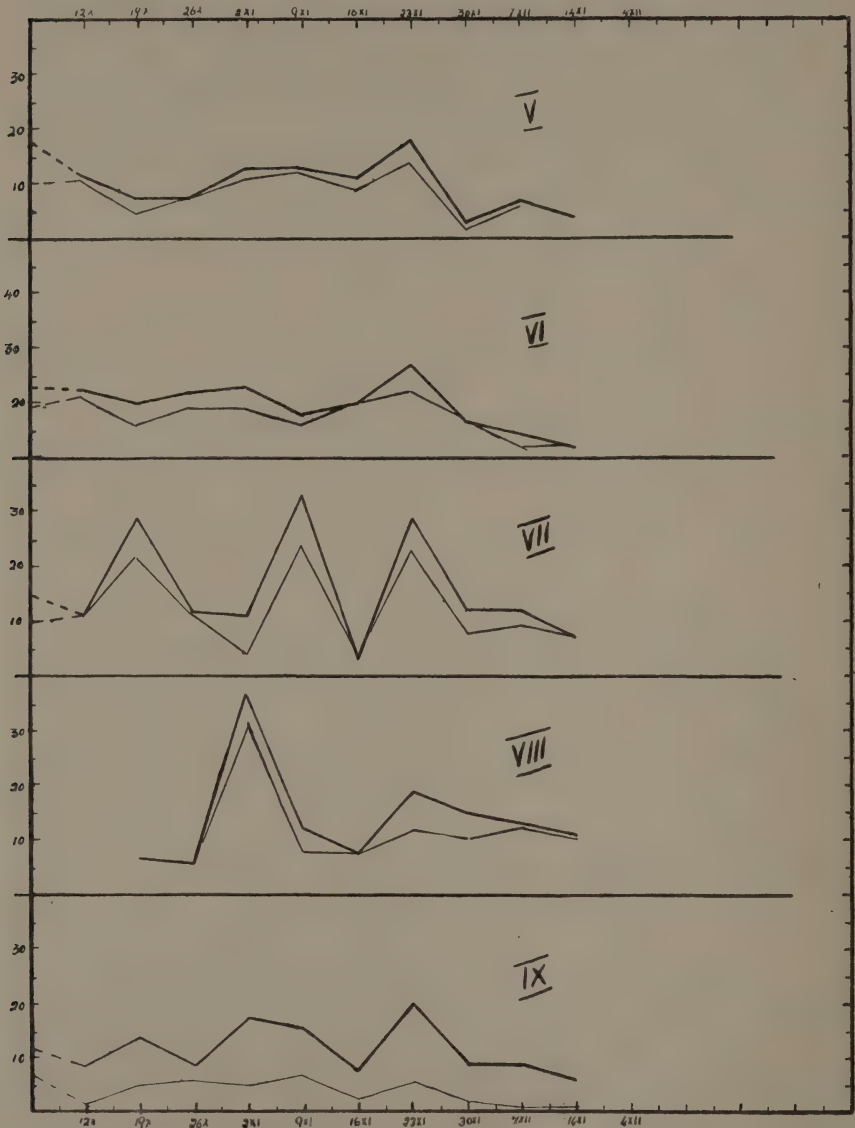
division graph, No. VIII, rises high on November 2nd. Division on that date was extended. When the class teacher saw the increase in errors she went back to the easier stage, but three weeks later she extended the sums again. A rise is shown in the graph, but not so great as on November 2nd, and the graph is satisfactory from that point onwards. The multiplication graph, No. VII, is not satisfactory; it is too unsteady. The class was at the stage when it had just "learned" the multiplication tables; and several classes have shown the same unsteadiness. As an explanation it might be suggested that unsteadiness is to be expected when children are learning their tables. Such an excuse is no more satisfying than the graph! If the sums were even "fairly" well arranged the error graph might be high, but it would



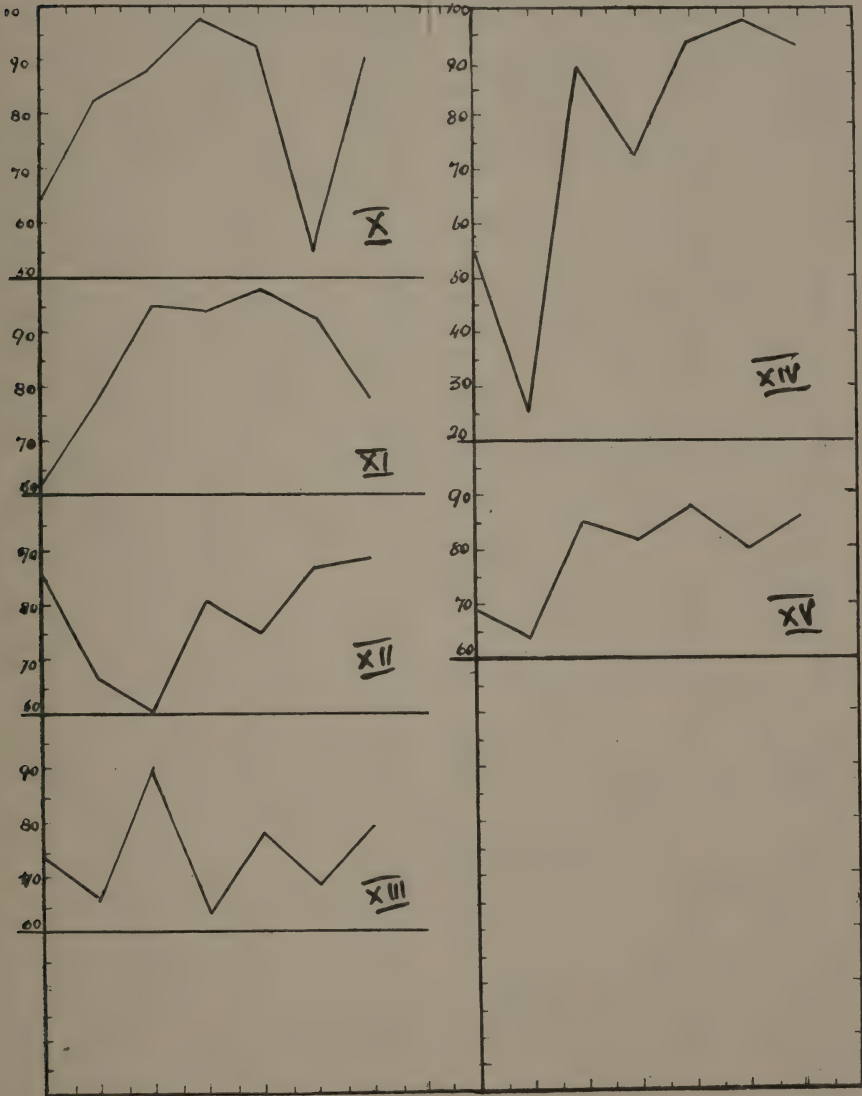
not show such variations. The only conclusion seems to be that our method of attacking the multiplication tables is weak. In an article by Dr. Ballard in Vol. 3, No. 1 of this Journal, he concludes that the best method of learning the multiplication tables is to work many exercises on the table, or part of the table, to be memorized at any time, with the table at hand for reference. Acting in accordance with this

conclusion, we are making a systematic attack on the multiplication tables with the hope that our graph, if nothing else, may be got in hand!

It is worth noting how closely the "one figure only" error graph keeps to the other.



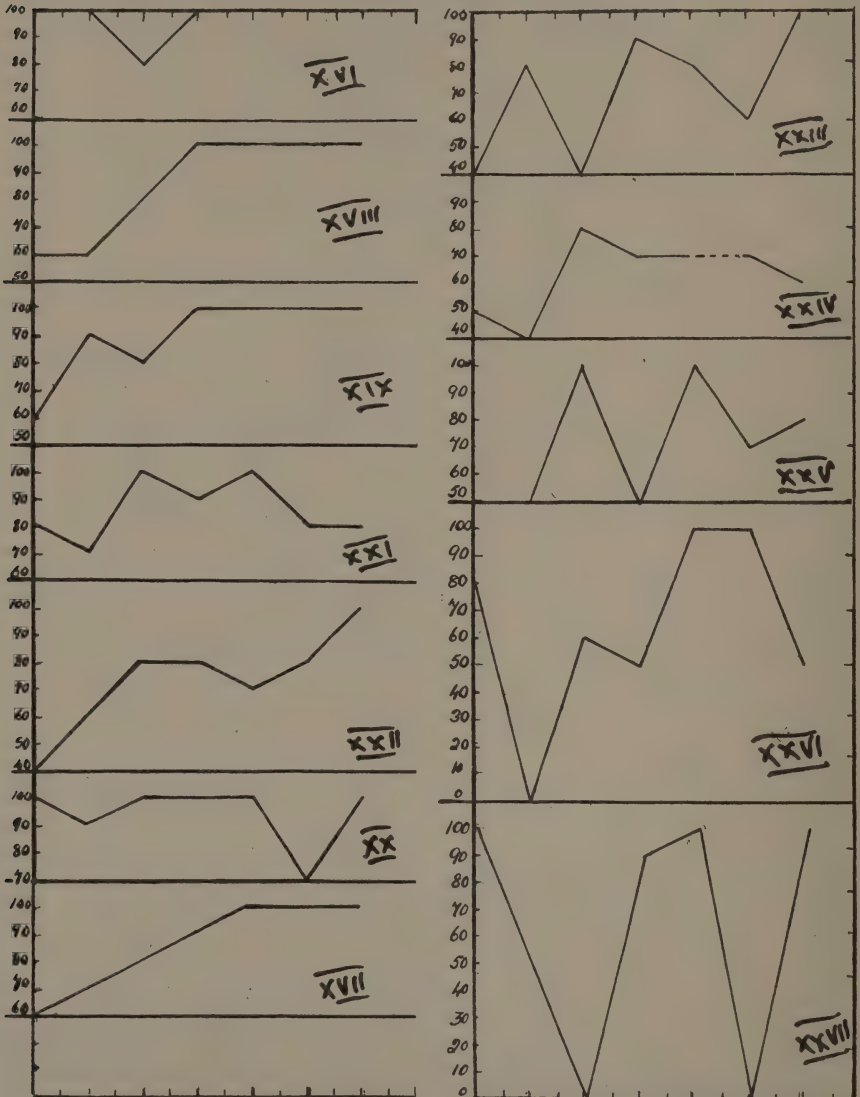
the reduction graph, No. X, can be accounted for in this way. The vulgar fraction graph, No. XI, and the proportion graph, No. XII, are quite satisfactory. The decimal fraction graph, No. XIV, is very satisfactory. The rise of the graph was the result of special attention to this part of the work. The general graph, No. XV, is good.



Graphs No. XVI-XXVII are copies of "individual" graphs kept by the scholars. Nos. XVI-XX are "excellent." In XVII and XVIII there is a steady rise, then the level is maintained. In XIX this rise is not so steady, but the high level is maintained when reached. No. XX is rather unsteady. Nos. XXI and XXII are "very good." No. XXII shows a steady "pull up." No. XXI is more irregular. XXIII



is a good graph; while showing fairly big variations, the general tendency is upwards. XXIV and XXV are only "fair." XXVI is bad the variations are big, and little progress is shown. XXVII is obviously very bad. It is interesting to note how, in some points, the individual graph reflects the temperament of the scholar.



The slight discussion of the arithmetic graphs shows that these are useful as records of work. They help the class teacher to find weaknesses, in his own attack it may be, and show the variations in the work of the scholars from week to week. Again, the graph indicates whether there has been a general improvement in class work over a given period.

The method gives a ready means of seeing how the class, or the individual, is working. If the class graph is steady, if the variations are small, one may reasonably assume that the class is working steadily. If, however, the graph is unsteady, one is forced to conclude that the class is not working well. This, of course, is true only of regular test work where there is no sudden introduction of difficult matter, and where the test is set, not to gauge the limit of power or speed, but to measure the progress. And the graph may be of use to the teacher to indicate when the class has been thrown into difficulties. A sudden rise in an error graph naturally leads one to search for the cause. If new work accounts for it the remedy is to hand. A steady graph shows satisfactory work on the part of the class; for an unsteady graph a great part of the blame rests on the teacher. We have seen that the graph may help the teacher when new work is introduced. It may do more. If the error graph is steady but high, the inference to be drawn is that, while the class is working satisfactorily, the tests are difficult. This raises the question whether a high steady graph is good or not, and whether a low steady graph does not show that the work set is too easy. These, again, raise the question of the object aimed at in setting weekly tests.

Our position in the matter may be given in a few words. The weekly test furnishes the scholar with an opportunity of working independently of outside help. Its object is not to find out the limit of the scholar's ability to work difficult examples at the time of the examination. The test, therefore, while set on work that has been done in class, should be such that the class may be expected to do it well. Mechanical difficulties may be given in work with which the scholars are thoroughly familiar, while examples on recent work ought to be easy. An occasional test to see what the scholars can do—a difficult test to “stretch” the scholars—may be good and necessary, but it serves a purpose different from that of the weekly test. From our point of view, then, a steady low graph is a satisfactory error graph.

An interesting use of the graph is to bring out the notion of relative value. A few questions soon lead a class to see that two sums wrong may be better one day than on another—that two sums wrong out of two given is very bad, while two wrong out of ten given is not quite so bad. So the class may be led to hesitate before saying a result is good or bad until it has all necessary information. In one class the point was raised, and it was decided, if the graph was to be of real value the number of sums in each weekly test would have to be the same. In a class a little more advanced, it was decided to graph the fractional number correct, for example, 3 sums correct out of 5 given, is  $\frac{3}{5}$ ths; the next steps were simple, first a decimal fraction was used, then percentages. It may be noted that percentages are here introduced not as a new series of puzzles, but as a need for the purpose in hand. This gives a real “jumping off” place for the teaching of percentages.

The keeping of records and graphs can be quite easily extended to individual scholars. In the case of younger children a record of sums wrong; or perhaps better, of sums correct, might be kept by each. The error graph is the interesting thing for the teacher, the “right” record is that for the child. In the senior division graphing could be commenced by each scholar; while each class teacher might keep the class graph, and discuss it with the scholars. The main interest and

value of the graph, it should be noted, is in the examination of it, not in its making.

In conclusion, it may be remarked that the graphing and the examination of errors furnish a help to getting at the root of difficulties in arithmetic. The graphs will show when and where weaknesses occur; if these are persistent they call for more careful examination. We have here an approach to systematic attack on errors; first with the help of the graph, or record, then in more difficult cases by analysis of class or "individual" errors.

## A SHEAF OF SCHOOL VERSE.

By NINA G. R. TAYLOR, M.A.

"The imagination is that of which each child that is born has something wherewith to lighten the Gentiles and to be the glory of the people; only it lies sleeping in a manger, and often is never awakened."

Greville Macdonald: *The Child's Inheritance*.

THE poems published below are taken from a little sheaf of verse produced by girls from 12—14 years of age in a Higher Elementary School. This is not the first time that we have been invited to enjoy the literary efforts of children: the *Perse* books are familiar to all, whilst many a school magazine bears witness to the way in which poetic talent blossoms in an atmosphere of freedom and sympathy. But perhaps never before have results so promising sprung from an environment outwardly so uncongenial. These children, who write with so pretty a fancy of fairies, with such freshness and charm of brooks and flowers, are the daughters of colliers and shopkeepers living under the leaden skies and in the monotonous streets of the outskirts of a great industrial city. Many of them have not yet spent two years in the school, where wise teaching and a well-stocked library have enabled them to travel "in the realms of gold," and freed them for ever from the meanness of their immediate environment. These girls read with avidity, and, though they have not the time to discuss all that they read, in the talks and debates of their informal literature lessons, they learn how intelligence and thought deepen enjoyment. Invited to write, they do write in prose and verse, trying their hand at a wide range of subjects and turning out lyrics, plays and parodies with equal readiness, if with unequal success. In this short paper no attempt will be made to deal with the plays, though it is interesting to know that one was "produced" in the infants' department, thus making clear to all the service that a writer renders to the community.

Let us look a little more closely at some of the verses, and try to consider the significance and educational value of this kind of work and the sort of difficulties it meets with.

### I. LATE OCTOBER.

Patter of fitful rain,  
Shiver of falling leaves,  
And wail of wind that has left behind  
The glory of fruit and sheaves.

Mist on the crowning hills,  
Mist in the vales below,  
And grief in the heart that has seen depart  
Its summer of long ago.

E.N., 13 years.

## II. THE RIVER ELF.

He wears a bit of river mist  
About him as a wrap,  
And from the dainty jewel weeds  
He makes a peakéd cap.

He sails abroad upon the web  
The water-spider weaves;  
And green above and red below  
He paints the lily-leaves.

He colours with a yellow gay  
The turtle's horny hide,  
And on the darting dragon-fly  
Delights to steal a ride.

He polishes the fishes' scales,  
And always in the spring  
Establishes his evening school  
To teach young frogs to sing.

Wee bits of sand with moonbeams bright  
He fashions at his ease;  
They flit away as fire-flies  
To sleep among the trees.

And when dark night has hushed the  
leaves  
And hid the king bird's nest,  
Upon a sparkling curly wave  
He slips away to rest.

D. J., 14 years.

## III. THE TIMID VIOLET.

I hear the harebells ringing  
In the dell beyond the lawn,  
I hear the throstle singing  
Glad greetings to the dawn.  
The sun still smiles upon me  
With a kindness few would doubt,  
Yet strange to say,  
Though mild winds play,  
I dare not venture out.

Oft the blackbirds by me sweeping  
Ere the April days have come  
Quietly whisper, "Hush! she's sleep-  
ing."

Though bees persistent hum,  
For they cannot hear my murmur  
'Midst the wind's strong noisy shout:—  
"Excuse me please,  
On days like these  
I dare not venture out."

But the time is drawing nearer,—  
I can hear its footsteps now—  
When a warmer day and clearer  
Will awake each slumbering bough;  
Then my green doors I will open  
And away with fear and doubt,  
In joy supreme  
Of a May-day's dream  
I will bravely venture out.

D. J., 14 years.

## IV. DAYBREAK BY THE SEA.

Majestic dawn rides up the sky  
And harries night along the west;  
The dappled clouds take clearer dye  
When Phœbus rears his fiery crest.

Above the dim horizon bar  
He throws a gleam o'er all the waves  
That murmur as they roll afar,  
Or plash in echoing ocean caves.

What wondrous silence everywhere!  
Only this crowning harmony  
Of sea-chants pulsing through the air  
In saddest, sweetest melody.

All nature wakes with gladsome cries,  
And praises from soft feathered throats  
Steal sweetly through the tender skies  
And melt in streams of limpid notes.

E. N., 13 years.

One has only to read poems I, II, III, and IV to realize that—though this service is incidental to a more important use—exercise in verse-making is undoubtedly a means of discovering latent talent. No poet would be ashamed of owning to the authorship of some of the verses of E. N. and D. J. "Late October" is a little gem, whose haunting beauty and maturity of thought and feeling seem extraordinary, given the age of its little author. "The River-Elf" is also quite remarkable; its pretty fancies fit the subject as daintily as the words in which they are so gracefully expressed. "The Timid Violet" and others by D. J. show that "The River Elf" is no spasmodic effort; whilst the full, rich melody of "Daybreak by the Sea" proves



that E. N. has a well-developed appreciation of the beauty of sound. Poems such as V, VI, VII, and others, show signs of talent, while all indicate a love of Nature and a wealth of fancy that only needed a little encouragement and a good deal of freedom to manifest themselves. It is just this freedom for self-expression and this scope for originality that are of importance, when it is a question of fostering the dawning literary taste and power of children.

#### V. SPRING.

Spring has come and all is bright,  
The warbling birds sing with delight :  
O happy Spring !

The trees bring forth their bright green  
gowns,  
Yellow gorse bedecks the downs :  
O dainty Spring !

Out of their green and mossy beds  
The flowers lift high their dewy heads :  
O tender Spring !

The rippling brook flows joyous along,  
Telling his life in happy song :  
O gladsome Spring !

The flowers bloom and birds do sing,  
The woods and hills with gladness ring :  
O gentle Spring !

B. P., 13 years.

#### VI. IVY LEAVES.

Twisting, turning, green and bright,  
In the warm sun's glittering light  
Round the trunks of old, old trees  
Visited by many bees.

Pretty little tender leaves  
Climbing up amid the eaves,  
Mounting higher every day,  
Always finding out a way.

Dainty little tendrils sweet,  
Looking very bright and neat,  
Holding tight to all things near,  
To all living creatures dear.

P. B., 12 years.

#### VII. THE CASCADE.

O'er rocks and o'er stones the water comes pouring,  
Splashing forth shower upon shower of white spray ;  
Onward it rushes and ever keeps roaring,  
Never once pausing throughout the long day.

The scent of the May-blossom floats on the air,  
And flowers on the bank are sprayed with foam ;  
Tall irises sweet stand stately and fair,  
Watching the water rush on to its doom.

Onward it dashes, frothing and foaming,  
Snatching up everything whirled in its way ;  
Homeward the laden bees fly in the gloaming,  
Sky gilds with gold after long summer's day.

At last, when it ceases its headlong career,  
It flashes, it splashes, it foams and it froths,  
Then flows on once more to the lake which is near,  
Entranced with low hum of the film-wing'd night moths.

The lake is starr'd o'er with lilies pure white,  
Fair, silvered and tranquil the waters' last home ;  
Forget-me-nots smile in their mirror of light,  
And the water rests silent neath cloud-fleck'd dome.

P. B., 12 years.

Before writing her poem, the authoress of "The Cascade" visited a waterfall some miles distant from her home, and subsequently tried to express in words and metre the look and the sound of falling water. The same sincerity in observation and fidelity in expression may be seen in "Ivy Leaves," another poem by the same child.

In considering the range of subjects chosen, it is interesting to notice that the great majority (twenty-nine out of forty-two) are concerned either with Nature or with Fairyland. Evidently it is to flowers and fairies that the child spontaneously turns in its imaginative

play, and certainly it is around these subjects that its talent is most happily displayed. And, in singing his joy at the "wonder and bloom of the world," he makes his first step forward in the appreciation of the glory and beauty of Art. Nevertheless, though Nature-poems be more congenial, a child of this age will attack more formidable topics with simplicity and courage. There is verse on "The Death of Sir John Moore"; on the reflections aroused by "The Coliseum"; "The Soldier's Christmas Vision"; two or three on the pangs of self-reproach and homesickness aroused in the breasts of rough-and-ready miners on hearing a lark's song; whilst half-a-dozen girls have tried to express what the nation felt last June in its grief for Lord Kitchener. Three of the latter are given to show how the more ambitious subject at once reveals the immaturity of the writers.

#### VIII. LORD KITCHENER.

Hero of England, praised and loved,  
Thou who dismissed trembling fears,  
Thou savedst our honour, brought us glory;  
Thy fame shall live through countless years.

No mercy had that foaming sea,  
The high, white-crested waves did lash,  
Tossing and angry, o'er thy ship;  
Hungry for prey, ne'er ceased to dash.

Thou in thy hour of glory died:—  
Press onward, Allies! freedom gain!  
Up from the deep thy clear voice rings;  
Let not our stainless honour wane!

C. P., 12 years.

#### IX. LORD KITCHENER.

Sacred within the hero's watery shrine  
Thou liest bemoaned by all true British hearts,  
While, up above, the foamy billows mock  
At those who sorely mourn and weep for thee.  
'Twas thou who cast thy magic o'er the land  
And stirred up men to fight for righteous cause,  
To stop the licence wild of unjust foes,  
And set the crushed, oppresséd nations free.  
'Twas thou who fought so gallantly and well,  
And earned thyself the ne'er-forgotten name,  
"Gordon's avenger, Kitchener of Khartoum."  
E'en from the depths of seething waters' foam  
Clear rings thy call to all thy nation's children—  
"March on! undaunted at the cannon's roar,  
And win a name of glorious fame, that ne'er  
Through all the unbounded roll of centuries  
Shall stained be with love of unchecked power!"

G. C., 12 years.

It will be seen that, for the most part, they are pitched in too high a key to be carried to a successful conclusion. One, however, goes with the lilt of a music-hall song, and, like the latter, can boast of a chorus! The first two verses run as follows:—

Kitchener, bravest of soldiers,  
Britain's most glorious soul;  
Lying asleep,  
Under the deep,  
Dreaming, whilst waves o'er him roll.

(Chorus) Kitchener's resting his last rest  
Resting beneath the blue wave;  
He's lying asleep, under the deep,  
Sleeping the sleep of the brave.

P. B. stated that her intention was to write a marching-song, and it seems likely that, in her preoccupation with her own skill in rhythm, the dignity of the theme escaped her. In any case, she has not aspired so evidently as her classmates to write worthily of a lofty subject.

In the case of a subject which, like this one, is too difficult for *all* the pupils, it is evident that much depends upon the teacher's criticism of the work submitted to her judgment. If, for fear of discouraging honest effort, she leaves them with the feeling that all is well, there is a danger that they will never see their own work in perspective, but will continue to turn out facile and trivial verse on any subject. But if, on the other hand, she does not disguise her view as to the value of their verses, and if she takes the opportunity of introducing poems in which great writers have handled a similar theme (here the end of "Samson Agonistes" naturally suggests itself), then she may do her pupils lasting good in deepening their comprehension of great achievement and in opening out new vistas for further enjoyment.

But it is not always *failure* which gives an opportunity for this sort of incidental teaching. Children take a real *pride* in their work, and are willing to do much to bring what they are interested in to perfection. In the ardour of perfecting their own poems or in the pleasure of hearing and judging those of others, they are ready to absorb much information about words and phrases, rhyme and rhythm, which would otherwise seem meaningless. Verse-making undoubtedly entails discipline in the use of language. That remarkable results may be obtained these poems witness. May we not invite those who despair of any effective teaching of English apart from a study of the classics to notice the command of vocabulary and the choice of happy epithet displayed by children who know no language but their own, and to whom wide reading has only quite recently become a habit?

It must not, of course, be supposed that all the poems reach a high level of originality. Undoubtedly, there are many traces of imitation; but, when it serves to secure close attention to that which we wish our pupils to study, imitation has a value not to be despised. Those who write of "the dewy night" and "the balmy air," or awaken memories with such lines as "Oh, silver moon, where are you roaming?" or "The sea, the sea, the glorious sea," have, at any rate, a certain literary background. Deliberate imitation is, indeed, to be encouraged in the case of those who fail to turn out any original work. In the collection there is a very good account of the school exhibition written in the form of a parody of "Hiawatha," and opening thus:—

Should you ask me whence these people,  
Whence this crowd of happy people,  
Laughing, talking, all together,  
All so jovial and so merry,  
Bursting in like roars of thunder  
On the sky of school so quiet;  
Should you ask me, I should tell you  
'Twas our day of exhibition,  
'Twas the day when all our parents,  
Askéd, came our school to visit. . . .

M. S., 12 years.

The reader can hear how perfectly the rhythm of running water has been caught, and how closely style and arrangement are imitated. And, although M. S. has never contributed anything original, she has gained an "animate knowledge" of "Hiawatha" and a personal interest in versification.

The permanent value of this kind of work lies in the surer grasp of language and the deepened enjoyment of literature, which flow inevitably from its proper use.

It may be that, as they attain to years which bring greater self-consciousness and feel how much "a man's reach" exceeds "his grasp," many of these little poets will cease to write. But this is no matter. They "have lived light in the Spring," and the free expression of their joy has brought them to the threshold of a new world, which it will take them a lifetime to explore.

This little paper will have served its purpose if, by producing evidence of the talent of some children, it quickens faith in the hidden capacities of all. It is not claimed that the encouragement of verse-making is the sole method of arousing potentiality, but it is, undoubtedly, one way, and, in any case, in the demand it makes upon the activity of the pupils, it is a welcome variant on the ordinary methods of presenting Literature.

## COLOUR PREFERENCES AMONG KAFIRS.

By S. WYATT, NORMAL COLLEGE, PRETORIA.

1.—THIS investigation was undertaken with a view to ascertaining colour preferences among Kafirs, and to bring out the differences in choice of colours between Kafirs and white people.

Previous investigators have experimented almost exclusively with white subjects, and the methods employed have often been crude and subject to various disturbing factors. Probably the simplest, quickest, and crudest method is to write the names of half-a-dozen colours on the blackboard and request the subjects to write down the names of the colours in order of preference. Such a process involves a comparison of six different stimuli; a task which is often extremely difficult even to a practised observer. Further, the name of a colour will suggest various shades of that colour to different individuals, and the selection may be considerably affected by such complications. A method which depends on imagery is decidedly unscientific; and the results of such will be generally unreliable. The value of the results of any investigation depend partly upon the method employed, and it is of fundamental importance in an investigation of this type that the colours should be directly presented to the sense of vision. Another principle violated by the method outlined above is the necessity of simplifying the experimental conditions without at the same time interfering with the aim of the investigation. The only method which, in this case, satisfactorily conforms to the demands of science is that of "paired-comparisons," in which the colours are presented in pairs and every possible combination of two colours is shown. Comparison is thus reduced to its simplest form, and selection is made easy. A further refinement is introduced by arranging that an interval elapses between the presentation of a colour and its recurrence.

2.—In this investigation, the following highly saturated and unglazed Zimmermann Colour Papers were used:—Cerise<sup>1</sup>(a) red(c) yellow(g) green(k) blue(n) purple(p) black(q) and grey(r). The colours were

<sup>1</sup> The letters in brackets refer to the coloured letters in Zimmermann's Catalogue.



gummed on a background of white stiff cardboard, and were shown in pairs in the following order:—(a.c) (g.k) (n.p) (q.r) (a.g) (c.k) (n.q) (p.r) (a.k) (c.g) (n.r) (p.q) (a.n) (c.p) (g.q) (k.r) (a.p) (c.q) (g.r) (k.n) (a.q) (c.r) (g.p) (a.r) (c.n) (k.p) (g.n) (k.q).

Thus 28 different combinations were presented and the successive presentation of the same colour was avoided. Spatial errors were eliminated by presenting each colour an equal number of times on the right and left.

3.—The tests were carried out at the Kilnerton Mission Station,<sup>1</sup> which includes a training centre for native teachers and a native practising school. The total number of natives tested was 199; consisting of 96 natives in training for teachers, and 103 native children in the practising school. They were of both sexes; the subjects in the former groups had all reached the adult stage, but those in the latter group were very heterogeneous as regards age; the members of a particular standard often varying from very young children to individuals in various stages of maturity. However, the lower standards naturally contained a greater proportion of younger pupils than the higher, consequently the results should give some indication of this unequal distribution of age in the various classes.

Since Kafirs are ignorant of their ages, it is impossible to classify the results strictly according to age; probably the nearest approach to a satisfactory classification would be represented by a division into two groups consisting of the pupil teachers and the scholars of the practising school respectively.

4.—Each standard or class was tested separately, and in every case a few preliminary experiments were made in order to familiarize the subjects with the nature of the processes. The two colours were held up in front of the class, and the natives were asked to indicate their preferences by raising the hand. That their decisions were practically unaffected by suggestion was shown by the spontaneity of their actions, and unrecognized representation of certain colours invariably produced the same results. Thus the colours of every pair receive a certain number of votes, and the total number of marks received by the respective colours will give an accurate numerical indication of the order of preference.

5.—The following table gives the results obtained from the different groups. The numbers in brackets indicate the total number of times each colour was preferred.

TABLE. I.

(P.T.3)	(P.T.2.)	(P.T.1)
Cerise (127)	Cerise (216)	Cerise (204)
Blue (121)	Purple (202)	Purple (182)
Purple (117)	Blue (143)	Blue (172)
Red (80)	Green (135)	Green (119)
Green (71)	Black (126)	Black (102)
Black (59)	Red (104)	Red (94)
Yellow (50)	Yellow (91)	Grey (81)
Grey (19)	Grey (47)	Yellow (26)

<sup>1</sup> The writer here desires to express his thanks to the Rev. F. J. Bresive, minister in charge of the Kilnerton Mission Station, and to Mr. J. C. Johns, Principal of the Training Centre, who willingly provided the subjects for this investigation.

TABLE II.

Std. 4.	Std. 3.	Std. 1 & 2.	Sub. Stds.
Purple (138)	Purple (103)	Purple (83)	Cerise (180)
Blue (134)	Cerise (100)	Cerise (70)	Green (166)
Cerise (117)	Blue (97)	Blue (69)	Blue (164)
Black (112)	Green (82)	Green (68)	Black (149)
Green (72)	Yellow (74)	Yellow (66)	Purple (140)
Red (54)	Black (52)	Red (59)	Yellow (139)
Yellow (45)	Red (34)	Black (54)	Grey (120)
Grey (0)	Grey (27)	Grey (36)	Red (91)

A combination of the results into two groups gives the following:—

Table III.

Adults (P.T's.)	Other Groups.
Cerise (547)	Cerise (467)
Purple (501)	Purple (465)
Blue (436)	Blue (464)
Green (325)	Green (388)
Black (287)	Black (367)
Red (278)	Yellow (324)
Yellow (167)	Red (238)
Grey (147)	Grey (183)

Thus there is a well-marked preference for cerise, purple, and blue; a result which is somewhat opposed to the general opinion that Kafirs prefer the brighter colours. The brightest colour of all (yellow), occupies a very low position in the list, and was often rejected in favour of black when these two colours were shown together. Writers on native life and customs differ in their statements on this point; thus Dudley Kidd,<sup>1</sup> writes "Natives love umbrellas in which each division is covered with material of its own bright colour," whereas Routledge<sup>2</sup> states that "Contrary to the usually accepted theory with regard to the black man, bright colours do not appeal to them."

In order to obtain additional information on this question, the subjects were shown light and dark shades of blue, green, yellow, and red. The two shades of each colour were presented at the same time with the following results:—

TABLE IV.

	P.T. (3)	P.T. (2)	P.T. (1)	4.	3.	1 & 2.	Sub. S.	Total.
Light Blue ...	4	6	10	4	6	5	11	46
Dark Blue ...	19	32	25	20	14	13	30	153
Light Green...	3	17	12	1	5	11	28	77
Dark Green...	20	21	23	23	15	7	13	122
Light Yellow..	3	6	4	1	13	9	26	62
Dark Yellow..	20	32	31	23	7	9	15	137
Light Red ...	5	4	5	6	2	4	9	35
Dark Red ...	18	34	30	18	18	14	32	164
Darker Shades ...				576				
Lighter Shades ...				220				

Thus there is an overwhelming majority in favour of the darker shades, and consequently the earlier results are substantiated. It is

<sup>1</sup> Dudley Kidd: "The Essential Kafir."

<sup>2</sup> W. S. and K. Routledge: "With a Prehistoric People."

noteworthy that this preference for the darker shades increases with age and development, and in this respect agrees with the results found in connexion with investigations on white people. In the lowest standard, in which the average age is least, there is actually a majority in favour of light green and yellow.

A glance at Tables 1, 2 and 3 will show that there is a decided antipathy to grey; and that the aversion to red, which becomes more prominent in the younger groups, is also very noticeable. Black occupies a higher position in the scale than one would probably expect, and in their partiality for black the adult Kafirs differ from the adult whites. In general, the colour preferences of Kafirs at different stages of development show great similarity, a fact which tends to support the view that the adult Kafir still remains very childish in his tastes.

6.—In order to obtain an idea of the colour preferences of white adults, the same tests were given to 11 women students of the Pretoria Normal College, with the following results:—

TABLE V.

Blue (66)	Light Red	0
Purple (57)	Dark Red	11
Red (52)	Light Yellow	1
Green (41)	Dark Yellow	10
Cerise (32)	Light Blue	10
Grey (29)	Dark Blue	1
Black (16)	Light Green	5
Yellow (15)	Dark Green	6
	Light Shades	28
	Dark Shades	16

The results are naturally only suggestive, yet they tend to indicate the difference in colour preferences between white and black adults. In general they suggest that the tastes of the latter are a development on those of white children, but are immature compared with white adults. It is hoped that this preliminary investigation will be followed by a more detailed and extensive investigation on the preferences and combinations of the native races of South Africa.

## FATIGUE TESTS—A PRECAUTION.

By ROBERT R. RUSK.

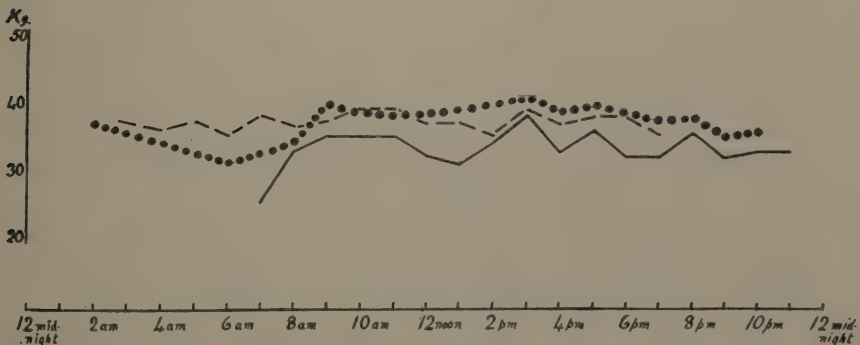
A CONDITION usually prescribed for psychological experimentation is that tests should, for comparative purposes, be applied always at the same time of day. In the case of investigations into fatigue of school pupils, this condition has not always been observed; readings of the dynamometer are taken, for example, at different periods throughout the school day and the records compared one with the other. The results have, at least in one investigation,<sup>1</sup> shown that the dynamometer records a greater gripping pressure in the afternoon than in the forenoon, and as this contradicts the results obtained by other means, the inference naturally drawn is that the dynamometer is unreliable, or less reliable than the æsthesiometer.

It may, however, be the method rather than the instrument that is open to objection. The rise in the pressure curve in the afternoon may

be the effect of an interfering factor left undetermined, for example, the diurnal rhythm of energy, and may even be consistent with the presence of fatigue conditions. To test this hypothesis, readings with the dynamometer required to be undertaken at a time when little or no mental work was being performed—for example, during vacation. On this being suggested to a class by the writer, a student—Miss Esther Hunter—volunteered to secure the necessary readings. Collins's dynamometer was employed, and the usual conditions observed.<sup>1</sup> The readings showed a surprising uniformity, and as illustrative of the right-hand records on the days when least work of a strenuous nature was performed, the three graphs here reproduced may serve. The zeal of the subject who underwent the tests may be judged from the extent of the graphs, the omitted portions representing the hours passed in sleep. An explanation of the lowness of the line graph may be that it represents the readings taken on a Sunday, and doubtless reflects the general depression that popularly obtains on a Scots Sabbath.

It is evident that in the absence of conditions inducing fatigue there are considerable variations in the dynamometric curve, that in the afternoon there is a marked rise. When, therefore, the dynamometer is employed to test fatigue, we cannot interpret a rise in the curve in the afternoon to mean the absence of fatigue; the measure of fatigue is rather the difference between the rise in the curve and the greater rise that would otherwise have taken place by reason of the fluctuations in the course of physical energy. This demonstrates the need in investigating fatigue of control tests applied at periods—for example, during vacations, when the subjects of the experiment are not engaged in mental work. It likewise suggests the rehabilitation of the dynamometer as a means of testing fatigue, and removes a troublesome contradiction in the fatigue results.

The work reported here might profitably be extended to subjects of school age, as the rise in physical energy in the afternoon, as evidenced by the dynamometric readings and the above graphs, is frequently used as an argument for placing manual work and physical exercises in the afternoon time-tables of schools, and this should be confirmed. Similar tests as controls for the other means of determining fatigue require to be applied during vacations, and, for its own sake, the course of mental energy might also be reinvestigated by various methods at times when no strenuous mental work is being performed.





## WHAT CHILDREN LIKE IN POETRY.

By H. E. A. PHIPPS.

" Old unhappy far-off things  
And battles.

THOSE who have the privilege of teaching poetry in girls' schools nowadays cannot fail to notice the appeal made by the present war poetry to the imagination of children, as much as by the tried and proved ballads of the past. Perhaps not all would agree with all the conclusions drawn from a small experiment in this connexion, which I propose to detail, but within my experience I find that children, on the whole, seem instinctively to appreciate such poetry as is of the heart and stuff of life, and to reject or pass by the slighter forms of elegance or craftsmanship, or artistry, as such.

This, then, is the account of some of my recent experience, which I give as a general practitioner, for those who are expert psychologists to deal with.

I asked the children to tell me privately the sort of poems they sincerely liked the best, saying I should not dispute or discuss their opinion with them. I found that amongst, roughly, fifty girls of the same age, about fourteen years, there was every possible stage of development in the appreciation of poetry, from the child who liked "Hiawatha" and Red Indians to the one who said: "I like the author to have a lot of feeling when he is writing, perhaps to have had trouble when he writes"—a remark made a day or so previously by a publisher about all verse written by women.

On the whole, they like "patriotic" poems, if they tell a story, but the story must not give itself at once. "I like a poem which rhymes and is not too long, one which has a story and a mystery," . . . "poems that are hard to explain," or, as one said about Wordsworth's "To a Cuckoo," "a double poem, that seems to be one thing and really is another all the time."

"I like it to end how I want it to," said one. "I do not like a poem to end all at once . . . just as it gets interesting."

Sadness in a poem, in a full-blooded way, seems to be liked. "I feel so sad when I read 'He Fell Among Thieves,' and yet I don't want to feel anything else. I like the feeling." That poem moved them as much as any, I believe, "because it is really a mysterious kind of poem, which requires a lot of thinking about, and ends up rather sadly. I do not like a poem like 'Proud Maisie,' rather dry and uninteresting, with nothing to think about."

"I don't like poems about flowers," said another, "which haven't a hidden meaning, something behind the literal meaning. Mysterious poems sometimes please me, but bloodthirsty poems are very nice, according to my taste. . . . Comical poems sometimes please me, things like the lines in 'Admirals All'—"

"He clapped the glass to his sightless eye,  
And 'I'm — if I see it,' he said."

The children were very insistent throughout on the necessity for vigour—"strong, fresh, well-chosen words." "A poem I really enjoy reading must be full of go. . . . I like it to be short and to the point, and I really think I enjoy a tragical poem far the most. I do not like a poem to be on a subject—the sky, for instance—but I like it to describe an exciting incident."

"I like one about war, or something romantic, something that is true, made up by someone at the front, or by a great poet. I don't like one made up by a sort of between poet, not a great poet and not a small poet. They are generally sing-song, with four verses in a stanza, and about the wind, or the cuckoo, or snow, or some of Nature's things."

"A small poet" I discovered to be one of themselves, who apparently produce enjoyable verse, and the writer who is glanced at in the last sentence was not unmentioned when the Laureateship was vacant.

It was curious, too, to note the effect of a refrain upon various minds, e.g., the ending of the stanzas in "Jock o' Hazeldean," or Mr. Alfred Noyes's "Sherwood," or "Admirals All." In a few cases, such a refrain produced distress, while most enjoyed it. I wonder whether, in this instance at least, the psychology of the effect of a musical chorus is different, and why.

One says she enjoys "poems which describe sounds like the wind blowing through corn, and the sound of the roll of the waves of the sea, and ships cutting through the water, and the tinkling of bells."

"Drake's Drum" produced in another the feeling that "I must jump about." This child read it to her grandmother, who lives away in the Fens. The old lady laughed heartily at the Devonshire words! That poem was a very great favourite, with its magnificent rhythm and suggestiveness.

It is evident, too, that the children accept a poem for its merits as a whole, and not for the beauty of any special phrases. Only those who have more power of subtle appreciation will do that, or, quite paradoxically, younger children; as, for instance, the Second Form child, who exclaimed at the line about King Arthur—

"Look wistfully with wide blue eyes  
As in a picture."

Only one said, "I like the author to put little words, quaint expressions of his own in." A child came to me out of school one day and said, with reference to "Admirals All," "I do love that line, 'And the word was passed to fight.'" We older people think that they will think rather of

"Never was schoolboy gayer than he  
Since holidays first began."

But I have never yet seen any child who regarded that line as anything but the odd humour of a grown-up person.

Rhyme they want, if possible alternate rhymes: "a kind of swing," "when the words in the poem seem to go to music," . . . "when the metre and rhythm of it express the action, such as a poem in which a horse gallops when one reads it," a reference to the "Ballad of East and West" and the line—

"Till he was aware of his father's mare in the gut of the Tongue of Japan."

One small point I noticed: in one case a great dislike of "enjambement." "I don't like a poem which has the first line continued so that it finishes in the second line," a very individual expression of that feeling of being out of step, which some verse has in a craven fear of being end-stopped.

But above all their favourite poem was Mr. Kipling's "For All We Have and Are," which they professed to like more every time they said it. "It always gives me queer little shakes. It is so very grand." You have "an exciting feeling when you are saying it."

I gathered, then, that these children preferred narrative poems to most others, that they appreciate some lyrical poems sometimes, but not such lyrical poems as touch upon the emotion of love—"('Proud Maisie' is dry and uninteresting, with nothing to think about)"—and that they simply do not want a moral, with one exception, as may be seen from the remark: "In many poems there are lines which make you feel as if you would like to do the same as the person in it has done."

I believe, too, that, within limits, it is desirable to ask children to say, "I like this or that." Professor Bradley once said that poetic pleasure was a thing *sui generis*, unlike the pleasure of eating, or playing golf, or doing anything else. If that pleasure is absent, then Poetry has failed in one of its prime objects. Distaste for anything can be avoided by its quiet removal, and hasty cocksure opinions about verse obviated by insistence upon some sort of a reason, if possible, though I think that very occasionally children may be told in so many words that they are wrong in not caring for any particular verse, if it is not merely a question of taste or experience.

Throughout, then, their reach must be beyond their grasp, and it is a point to be decided how far verse beyond their reach should be given them. I think those poems that leave them unsatisfied with a dumb, dim longing to know more should be mingled sparsely with those they clamour to read next, like "The Road to the Trenches" or "The Slave's Dream." Yet this must be done sparingly, and only with poems of a very direct simplicity, in very humble recognition of the obvious fact that a child cannot see as the grown-up mind does. Lord Tennyson's "In Memoriam" and Sir Henry Wootton's "How happy is he born and taught" will be left for a riper experience than that of twelve years. False ideals of conduct as well as wrong ideas of beauty are suggested otherwise, and the child says, "It is a dull poem, and I do not think that anyone likes it. . . . It is a good poem, but I think that anyone who lived like the man in the poem, without ambition, would be a very poor creature. . . ." That, surely, is one of the failures of Poetry.

Throughout, then, one needs to remember that it takes a wise man, so Plato said, τὸν λόγον διδόναι, and if children say they like this or that, they may very probably like something different as well, which they would accept gladly when presented to them.

## SYNCHRONOUS GROUP WORK.

### (A justification of Simultaneous Reading.)

By G. M. GRAVES.

WITHIN recent times there has arisen a certain prejudice against the forms of "Simultaneous repetition" (synchronous group work), more especially in elementary schools. The very term has been sufficient to conjure up well-simulated, if not actual, nightmare visions of coarse-voiced children bawling some more or less meaningless jargon in a raucous, monotonous kind of sing-song. Mr. Holmes, in his recent book,<sup>1</sup> associates collective repetition with "over-grouping of classes, over-crowding of schoolrooms, collective answering, scribbling on slates, and other faults."

<sup>1</sup> *What Is and What Might Be*, p. 94.



It is to be feared that on account of the unfortunate use at one time too frequently made of this otherwise useful teaching device it did become (mainly, however, through force of circumstances) one of the cardinal faults of the elementary school, exercising a malign influence, and being gravely detrimental both to proper speaking and intelligent thought.

When schools were almost universally insufficiently, and often inefficiently, staffed; when, indeed, as is well within the knowledge and experience of the writer, the staff too frequently consisted of the head with boy and girl helpers only, and when, too, schools were inadequately stocked with suitable books and apparatus, "simultaneous repetition" was invariably and often unavoidably the most convenient method of memorizing "by heart." It should, however, be remembered that no small amount of blame attaches to Government regulations, which actually required a large amount of "learning by heart." Hence an obscure species of "word perfection" took precedence of intelligent appreciation of meaning, and a large proportion of school time was taken up with the misuse of collective work of this kind. Sometimes it was the last resource of a weak disciplinarian. The class was by its means reduced to some semblance of order, and an apparently legitimate sound drowned illegitimate noise. This possibly served an immediate purpose, but a lamentable result was of course inevitable.

With educational enlightenment and emancipation it was natural that all methods which had produced an obviously bad effect should be repudiated, and among these collective repetition inevitably took its place. Yet in the circumstances it is contended that condemnation *in toto* was not merited. The fault lay not with simultaneous work itself, but with the way in which it was used. It was, indeed, badly misused, and too often to the exclusion of individual work.

Nowadays, the person bold enough to defend collective repetition is dimly suspected of advocating a reversion to methods now happily obsolete, at any rate in up-to-date schools. Yet without hesitation it may be asserted that, properly applied, the device may prove a valuable auxiliary in school work, and that instead of producing careless habits of speech it may promote clear and accurate enunciation, and instead of being unintelligent it may be made a useful aid to mental development.

Before, however, the use of simultaneous repetition can be safely sanctioned, the delusions once prevalent concerning it must be dispelled, otherwise evil and not good will certainly accrue.

In the first place, it must be used under the most careful guidance and control of a skilled teacher, one who is really proficient in the art of speech, and who has some understanding of the physiology of the vocal organs and their proper use in expressing the different phases of feeling. He must recognize that the work is really difficult and arduous. This need not demand any unusual or highly-specialized ability, but such factors are essential if beneficial results are to ensue.

Mr. Holmes remarks upon "the pestilent habit of collective answering, in defiance of the obvious fact that what is everybody's business is nobody's business." The same criticism can, of course, be made in respect to collective repetition, but under an efficient teacher, with the alert ear and vigilant eye, in this, as in all other connexions, everybody's business would assuredly be the business of everybody.



The criticism can only assume incompetency, and catch phrases of this kind may easily mislead.

A few suggestions may here be given as to the application of simultaneous repetition to lessons generally. Experience has proved that it is useful to preface this work by a few special exercises on the enunciation of common sounds, and a study of the "mouth shapes" required in their production. This side of the work should always be borne in mind by the teacher, who will be able thereby to detect faults by watching lip movements. Correct utterance will in due course become mechanical with the children, so that attention can soon be focussed upon the subject matter. Considerable discrimination must be exercised in the selection of passages for collective study, whether in prose or verse. The intrinsic literary merit, the inherent value of the thoughts portrayed, the scope existing for collective expression, and the difficulties likely to arise from the varying power of breath control in the different children, must all be considered.

The passage should at first be so dealt with that its general meaning is understood. It should be read silently by the whole class, then aloud by the best readers, and finally by the teacher, whose reading should contain as far as possible all that is best in the children's rendering, together with his own interpretation of its spirit. This should be taken as a pattern for the class, and should be repeated phrase by phrase after the teacher in exact imitation, imitation not in word only, but in every inflection of voice and every detail of intonation and expression, facial as well as vocal.

Much has been written against imitated expression. It is argued that all genuine expression must be the natural and spontaneous utterance of emotion. But in the case under review expression is not divorced from the feeling which should give rise to it. The child is made to *feel* the meaning of the passage by the teacher's explanation and rendering, and by imitating this he will necessarily stimulate and strengthen that feeling within himself. With only a vague realization of meaning an artificial expression may give rise to its corresponding emotion, thus reversing the usual process. Even when children have a proper appreciation of the meaning of a passage they are often unable to give a good rendering on account of their very limited powers in the use of the media of expression. In such cases they grasp at the teacher's reading as the very thing they desired, and perhaps even yearned for, and by imitation they experience that innate responsiveness which enables them to give expression to their own feeling. How often after a beautiful rendering of a favourite poem do we hear, "I wish I could do it like that!"

It has been said that the vocal expression of children is naturally good. In their ordinary conversations certainly the expression is frequently excellent, although probably wedded to dialect and the language of environment. This may be true, but it is quite a different thing from that kind of expression which is prompted by literary association, and has no apparent connexion with the material circumstances affecting the child. When a child asks for a cake he will ask expressively because he wants the cake, but if he merely reads the words as used by an imaginary boy asking for an imaginary cake his request is divested of real personal interest and genuine expression. If for no other reason, imitated expression is of use because it gives practice in the use of the mechanism of expression in connexion with literary work.

It has, again, been said that imitating the expression of another permanently represses individuality. Experience, however, has shown that, though it may limit the exercise of personal characteristics in dealing with a particular passage, it really gives the child greater power to assert his own individuality in his subsequent performances.

It has been pointed out that the renderings of certain passages by different elocutionists vary considerably according to their different peculiarities of temperament and individual idiosyncrasy. This is admitted, but in the comparatively simple passages which come within the scope of the work of the elementary school it is more than likely that the general elements of expression are identical in all good readings.

But here as elsewhere in the manifestations of human personality similarities outweigh differences. At the present time there is evidence of a tendency to forget that the common fundamental elements in human nature need as much direction and education as individual differences and peculiarities. These are really the basis of social life and mutual sympathy and co-operation, and these common factors of personality can to a certain extent be trained and developed collectively. Individual differences should not, of course, be ignored, but as far as the elementary school is concerned they are not of primary importance. Originality and initiative are supplementary to the common ground of mutual understanding and communal life.

Simultaneous repetition properly taken is a social performance. It promotes in a class a valuable spirit of co-operation. It conduces to the development of esprit de corps and a sense of unity and coherence. A good moral effect is necessarily produced by a combined and unanimous effort to attain a specific and worthy object. Personal vanity, which is known to spoil so many otherwise good readers and reciters, can find no place here. Yet each child is induced to use his powers to the utmost in the interest of the common achievement. The collective class rendering of a passage of literature is found to be better than that of individual members of the class, because the element of self-consciousness, the greatest hindrance to self-expression, especially in the higher classes, is practically eliminated.

What has been said applies to simultaneous *répétition* whether of prose or verse. The device has been made of special use in the teaching of poetry.

Certain poems in which there is a recognized agreement between sound and sense are particularly suitable for collective study. "The Falls of Lodore" is an example. When this is well said by a class as a whole a listener has no difficulty in catching the music of the waterfall in the voices of the children.

This work can here be regarded as a branch of vocal music. A poem treated in this way bears many points of resemblance to a song. There is in many poems scope for a collective spirit and expressional ideal, as well as for that which is purely individualistic. The children should be led to realize fully the phenomena and characteristics which their voices are intended to portray and signify. The onomatopoetic effect in words should be pointed out to them, and the greatest care should be taken to express this to the full. The meaning need not be exhaustively explained—something of a mystery in a poem makes it all the more fascinating—but the *atmosphere of the poem* must be felt. By such a use of children's voices a depth of

beauty and music is brought home to them which is very effective, and which it is very difficult to communicate in any other way.

Simultaneous repetition should never be used as a substitute for individual work, but as supplementary and as auxiliary to it. A passage from a reading book may *occasionally* be treated as indicated above, and be read collectively. It will be found that expression in individual reading will benefit thereby.

Memory work in connexion with poetry should not, of course, be confined to simultaneous study. It should be recognized that only certain poems are suited to such study; others, in which the feeling can make a direct appeal to the child through the words, should be studied privately and rendered individually with the child's own expression and emphasis. This will probably be greatly improved by imitative simultaneous work.

As things are, and with such a loaded curriculum, there is not a great deal of time available in an elementary school for individual work, and far more practice can be given in speaking, reading, and reciting, if these exercises are done collectively. Activity on the part of the individual pupil is of far more value than mere passive listening. The major parts of speech are usually indigenous to a locality, and hence in ordinary schools they can be corrected collectively. This gain of time is in itself sufficient to commend simultaneous repetition to the serious consideration of all teachers, but such work offers certain specific advantages beyond this.

Its proper use conduces to a fuller and better appreciation of literature. It is one of the best methods of training the speaking voice, and can be made a valuable means of cultivating in a class a quiet and dignified manner of speaking with the mental refinements which would naturally accompany this. And, perhaps above all, it can be made an instrument in moral training, and serve to stimulate and promote healthy feeling both in the class as a whole and in the individual child.

## MINIMUM ESSENTIALS IN ELEMENTARY SCHOOL SUBJECTS. II. ENGLISH.

SINCE the last number of the *Journal* appeared, Dr. Starch has gathered into a single volume<sup>1</sup> the various attempts to apply the "yard stick" to the attainments of schoolchildren, and in so doing has made it possible to survey the whole ground more adequately. His book is a collection of tests rather than a criticism of them either from the theoretical or the practical standpoint, but the usefulness of this assembly of scattered efforts cannot be too generously acknowledged. The report of the "National Society for the Study of Education"<sup>2</sup> is done by various hands, and as its chapters are often critical, the actual tests are not always completely given. They are described and summarized.

In so far as school accomplishments consist of a measurable degree of command over definite material, it is not difficult to devise satisfactory means of testing it. We may go further and say what experience has shown to be the amount of command ordinarily found in children of different ages, and how much variation from that mean is to be

<sup>1</sup> *Educational Measurements*, by Daniel Starch. Macmillan, 5/6 net.

<sup>2</sup> v. last issue of this *Journal*.



expected. This applies for example to the use of the first four rules of Arithmetic, and if our language were phonetically written it might perhaps apply to spelling and reading tests. Even here something like measurement may be applied by using standardized material generally accepted as reasonably representative of the "stuff" as a whole. The problem is much more difficult, however, when we have to deal with skill in the use of language; but the difficulty of the problem is no reason why it should not be attacked, and our American friends have not been wanting in courage.

The enquiry began in the first place in the interests of school management as that term is understood in the States. It was, I think, initiated by Dr. E. M. Rice, whose prime concern was the efficiency of the teacher. His researches confirmed him in his belief that "almost every pupil is capable of acquiring the art of writing good English, and that the normal child is not to blame if he has not acquired the power of expressing his thoughts in creditable English by the time he graduates from the elementary school." And again after discussing the failures he writes: "On considering papers of this nature, the uninitiated will be likely to conclude that their authors, by means of hereditary influences, had entered this mundane sphere with brains incapable of normal development, or, by reason of unfavourable home environment, had had their intellects stunted during the pre-scholastic period. But, my dear reader of the uninitiated class, I beg of you not to believe anything of the kind, but to take my word for it that in the vast majority of such cases the pre-scholastic period was innocent."<sup>1</sup>

What, then, was Dr. Rice's plan? A short story containing just over 400 words was read by the teachers and was reproduced in writing by the class. Twenty-two different schools, in eight different cities, were put to the test, and 8,300 children were concerned. "The test was sprung upon the children without any previous preparation, and the first draft only was accepted." Dr. Rice marked all the papers himself, dividing them into five classes, excellent, good, fair, poor, and failure, which he expressed in percentages for purposes of class averages as 100, 75, 50, 25, and 0 respectively. He marked them at the rate of 60 per hour, giving what we call "impression" marks, but as a test of the stability of his judgment, he read the papers of the 6th, 7th, and 8th grades again, only to find small changes in the absolute figures which did not affect the relative portion of the schools. He concluded, therefore, that his "ratings" were satisfactory.

Papers of the highest grade were not numerous. To be put in that class the composition had to show some marks of originality and artistry, as well as well-constructed sentences, freedom from technical mistakes, and a coherent, well-balanced narrative. It was this mark of originality which lifted them above the second class. Selecting these papers (classes 1 and 2) was not difficult. Class 3 resembled 2 in sentence construction, but contained badly-constructed sentences, wrong verb forms. A certain weakness of grip would also reduce an otherwise error-free paper from class 2 to class 3. In the "poor" group flaws outnumber good points, and yet they are not bad enough to be complete failures. Failures had little in their favour "beyond properly constructed sentences in the middle of faulty ones."

It seems worth while to quote a sample of different grades in order to bring out the points of this classification.

<sup>1</sup> What follows is taken from Price's *Scientific Management in Education* (Harrap & Co.)



*Grade 1.* Very soon after the close of the bloody war with Austria, Stanz, a poor Swiss village which had suffered heavily in the campaigns near it, established a home and school for the orphaned sons of the sacrificed soldiers. It was a humble room in a poor convent, but in it the boys ate, slept, and studied. They were cared for and instructed in their lessons by an old man who was fond of children, and so volunteered to act as their father and teacher. At first the boys, unaccustomed to anything but entire liberty, disliked him, but soon as they realized the sacrifice he was making for them, they joined to love and praise him.

They were not destined, however, long to remain in this haven of safety, for, within a year of its foundation war again broke out. Again a battle was fought near Stanz, and many Swiss were wounded. The schoolroom was the only place available for their protection, and the boys were for the time deprived of their home.

*Grade 3.* About one hundred years ago in a small town called Stanz, in Switzerland, there were a great many poor boys whose fathers had been killed in war. In this town their lived a very kind old man who agreed to teach and take care of these poor boys. The only place they could find for a schoolroom was a small room in a convent. At first the boys did not like their schoolmaster because he made them work, but they soon learned it was for their good that he was doing it and they loved and obeyed him.

But these poor boys did not have much room for they had to study eat and sleep in one little room. These boys did not keep their abode long, for one day about a year after they had been—there—there was a battle near Stanz and a great many soldiers were wounded, and the General came to Stanz to see if he could find a shelter for these poor wounded soldiers, and the only place he could find was the boys schoolroom so he mournfully came to the schoolmaster and asked him if he would let him shelter the soldiers there and the schoolmaster said yes and so the poor boys were turned on the street again.

*Grade 4.* About a hundred years ago there was a terrible war broke out near Stanz in Switzerland. Their was quite a good many boys who lost their parents and lost their home. The people of Stanz were poor but they tried to help these boys. They found out for them an old convent. This convent had but one room in it. An old man said he would go and live with these boys and be their master.

The boys at first did not like him because he tried to teach them but they soon liked him for trying to teach them. He was very kind to them and did all he could to help them and he soon made them happy and they did not think so much of their dear father and mother who were gone of them.

This kind old man did not only teach them but also entered into some of their games. He often told them stories. He was like a companion to them. He was always with them.

As I said there was one room to the convent in the convent they had to—sleep—eat their meals and also to learn their lessons and play their games here sometimes. These boys did not hate their schoolmaster any more but loved him dearly.

*Two other paragraphs of like quality follow. The story ends:—This (the convent) was turned into a hospital for the soldiers. The boys love this convent but gave it up to the sick.*

It is hardly necessary to quote a sample of the class "failure," and I have omitted an example of grade 2, as its chief difference from grade 1 lies in the absence of any qualities lifting it above mere commonplace accuracy and straightforwardness.

As we have previously mentioned, Rice was concerned to test the relative efficiency of schools and of teachers, and not to arrive at any normal standards for children of different ages. He examined the papers of children from the 4th grade upwards, calculated averages in these grades for twenty-two schools, and drew up a table of comparative results. The table showed also the amount of time given to language, and the percentage of children of foreign birth in each School. Space will not permit the reproduction of his table. We may note, however, that the average marks for grades 4, 5, 6, 7 and 8 were 6.8, 12.2, 23.2, 30.6, and 47.0 respectively. His table does not give the standard deviations, but these were considerable in every case.

How to account for these variations was his next problem.<sup>1</sup>

In general he came to the conclusion that success in teaching, as measured by results, is primarily dependent upon something inherent in the teaching itself. It was not accounted for by the amount of time given to the subject, nor by the smallness of the class, nor by the scholastic or pedagogical attainments of the teacher, nor by the methods employed. Yet the results did not countenance the view that the teacher is born not made, or there would have been striking differences within the same school building. The only conclusion he could arrive at was that "training had not yet hit the mark," for the reason that the public at large had not made the specific demand for better results from the Training Colleges; indeed the teachers were taught to despise results and to put all their faith in the spiritual effects of rational methods of instruction. "A teacher is called successful if her methods are in the latest style, if her manners are pleasant, and if her pupils show an interest in the current lesson."<sup>2</sup>

Dr. Rice admits his temerity in suggesting that teachers should be judged by results, and he recognizes the evils wrought in the past by systems of the kind, but these evils were, he thinks, due to looking for results of a wrong kind—mechanical results rather than "results which show a true indication of intelligence and efficiency," and he asks for (1) a well-defined but reasonable minimum demand, based first upon a clear conception of an ideal end, and, secondly, upon a knowledge of what a fairly good teacher is able to accomplish in the desired direction; and (2) a clearly-defined method of judging to what extent each teacher is meeting that demand.

Incidentally we may note that, in Rice's view, written English is the most important "subject" of the elementary school, because it is "representative of the character of the training that the child has received as a whole, . . . of his thought power, logic, understanding, taste, sentiment, precision, and so on." He did not find that Grammar played an important part in the development of this power, and he concluded that forty-five to fifty minutes a day devoted to the mother tongue should give quite satisfactory results.

This extensive reference to a research of thirteen years ago perhaps needs an apology, though the work is not as well known in England as it should be. I have cited it at some length because, along with the author's other researches, carried out in a similar spirit, it started a movement in America which has taken many forms. Amongst others, those elaborate educational surveys which have been commissioned by many city authorities in the States may be mentioned. Moreover, the effort of Rice to grade and measure acquirement in English, Arithmetic, Spelling, &c., has been followed up by extensive further researches sometimes so elaborate in their results that one goes back to the simplicity of the original worker with a sigh of relief, and a feeling that here at any rate is something useful.

English composition is a case in point. Rice's five divisions make a practical appeal to the hard-worked teacher who is appalled by the elaborations of the Hellegas-Thorndike scale, a discussion of which, and of other efforts to produce a measuring rod for the English of school-children, is reserved for our next issue.

J. A. G.

<sup>1</sup> Not being absolutely satisfied with the "impression" method of marking, Rice attempted to classify and count the actual errors in 2,000 of the papers, but gave it up because the number of errors in a paper bore no relation to its literary merit, and the errors themselves could not be "numerically" compared. "A composition must be judged as we judge a picture, by impression."

<sup>2</sup> The fact that the word "teacher" is feminine in gender in American books is suggestive in these times.

## REVIEWS.

**The Psychology of the Organized Group Game.** By Mabel Jane Reaney. *British Journal of Psychology*, Monograph Supplement IV (76 pp.).

DR. REANEY's important monograph springs from work done in connection with a long investigation on problems arising out of the group game. With the delicate instrument of psycho-mathematical research, Miss Reaney has tackled such problems as lend themselves to experimental treatment. The problem of the relation between ability at games and general intelligence was the first one handled. About this topic we have heard "great argument about it and about," and opinion has swung first to one side and then to the other. Miss Reaney, treating the problem in a scientific way, succeeds in establishing a definite positive correlation between the ability to play games and general ability. Those who have followed the record of her work realize that this method of dealing with the subject has lifted the question of athleticism out of the range of mere opinion and set it in the realm of ascertained or ascertainable fact. Even now the evidence which will establish the extent to which prolonged training in group games affects moral development is slowly accumulating, and, whilst the solution of this problem is maturing towards completeness, we are glad to welcome, from so competent an authority, a more general discussion on the philosophy and psychology of Play.

For, before she addresses herself to the particular problem of the psychology of the organized group game, Miss Reaney deals with the nature and meaning of Play. Like other writers she feels how elusive is the distinction between Work and Play, and she draws attention to the truer contrast between *Play* and *Drudgery*. Play is defined as "that type of activity in which the end is in harmony with the means and the individual with both; and in which the instincts have full scope or are sublimated in such a way that their serious end is not reached"; whilst Drudgery is an occupation involving the *baulking* of instinctive dispositions. Play is no simple instinct or impulse, but an activity which makes use of a number of instinctive tendencies. The Freudian note in these definitions suggests a line of thought which appears again in her developed theory.

A discussion of the *Play Periods* follows. The uniform results given by a variety of investigations is noted. Miss Reaney herself adopts four main groups corresponding to the chief culture epochs.

In considering *Types of Play* the work of Groos is followed in general outline, and, in the case of English games, additional material drawn from writers on national games and folklore is made use of. It is interesting to learn that football, hockey, and cricket are the final stage in the evolution of the impulse to throw a missile at a mark—a propensity which may be seen in the monkey as well as in the young infant.

In a comprehensive review and criticism of the various *Theories of Play*, Miss Reaney shows that whilst each has its value in a limited field, not one of them alone is adequate as a complete explanation of the manifold types of playful activity. She believes that the true view lies in a combination of the four chief theories, for "a really comprehensive explanation will involve them all."

Her explanation of that highest form of motor play—the organized group game—involves the use of both the Recapitulation Theory and the Practice Theory. The *organized group game* is defined as "a game played by two opposing teams under a leader, according to definite fixed rules." Like other forms of play it makes use of a variety of deep-rooted instinctive tendencies, and is specially characterized by the inclusion of "those tendencies which appeared when man reached the tribal stage, and which showed themselves in the youth of the race at the period of adolescence." Thus, in playing organized group games the young recapitulate racial development and "in so doing train by the action of intelligence those instinctive tendencies which have been evolved in the continuation of the race."

In a very interesting account of the evolution of the principal national games, Miss Reaney shows that those played by races advanced in development have two



common characters: all are played with a ball propelled by a stick or part of the body, and all involve teams and co-operation.

A very full and careful analysis of the various games leads to the conclusion that cricket is the most highly evolved. Exclusively a British game, and essentially scientific, it requires the co-operation of highly-skilled and responsible units. Consequently it appeals mainly to the intellectual classes, whilst football, which besides giving scope for combativeness, rivalry, and the group spirit, satisfies the ancient need for personal contact, is more popular with the masses.

Miss Reaney thinks that a complete explanation of these games in modern times involves a reference to Freudian theory, for a difficulty is involved in the fact that though the dispositions balked by civilization find satisfaction in games, they do not, in such exercise, reach their natural ends. For instance, though the game may be carried to the extreme limit of excitement, neither anger nor a thirst for revenge are displayed. To account for this it is suggested that the steady repressive influence exerted by a civilized environment brings about a dissociation of the ideas connected with these tendencies from the general mental content. In playing games these tendencies are revived in connexion with the games idea, and, thus associated, they fail to recall their emotional concomitants in their primitive form—or only recall them in a fainter degree. Thus the game idea, like the dream, gives vent to unsatisfied desire.

On this theory it is not surprising that the Anglo-Saxon, in whom the instincts of pugnacity and rivalry are strong, should respond to the fascination of the group game, the special popularity of which in the nineteenth century is also accounted for.

With regard to the sporting spirit—the “*cult of playing the game*”—the views put forward are of extreme interest and significance. An essential feature of the game is the feeling of inner freedom, which is the mark of all unbalked action. Now, Miss Reaney has ascertained that individuals playing games find that the sense of inner freedom “can only be maintained if the game itself is maintained as a unity.” This again involves the securing of harmonious action by means of fixed rules, and thus a certain habit of thought, which is essentially ethical in character, arises in connexion with the games idea.

The potency of the tradition of “playing the game” in bringing about the sublimation of instincts, imperfectly repressed in a slum environment, is a further illustration of the moral value of games. They should evidently be widely and deliberately used, not only to secure the sanity and poise of the individual, but also to disseminate the really fine code of honour implicit in the games idea among all classes of the community. If such a use were made of them it is probable that the results obtained would eclipse even those of the Boy Scout movement.

To conclude, we may say that it is the social function of games which this thesis reveals. And, if we agree with its author in regarding them as the prophylactic evolved by civilization against some of its worst dangers, we should be “fools and blind” not to use them to the utmost as an indispensable instrument of education.

Two appendices give (1) the synopsis of results obtained from answers to a questionnaire on the educational value of group games, and (2) (a) Results of experimental research on Play Periods, (b) Historical references to the value of Play as an educational factor, and (c) The Playground Movement in America and England.

A comprehensive bibliography concludes the monograph.

N. G. R. T.

**The Sounds of Spoken English and Specimens of English.** By Walter Rippmann. (pp. i to vi, 1 to 152; 1 to 232.) Dent's Modern Language Series. 3s. net.

ALL interested in our spoken language will greet with pleasure the appearance of a new edition of Professor Rippmann's “*Sounds of Spoken English*,” an appearance somewhat mysteriously delayed. A few copies were procurable in 1914, and



then the issue was withheld for a short time, though it was possible to obtain the book by way of Japan. The new volume is a combination of the familiar edition of the "Sounds" (1913) and the "Specimens of English" (1911), but the two previous volumes have been carefully revised and many valuable additions have been made.

The Glossary has been extended from twenty to eighty-six pages, and most of the words are followed by a number showing reference to the treatment of the sounds in the body of the book. Annotations of the "Specimens," wholly absent from the earlier edition, occupy forty pages, and reference is made easy by an elaborate, but entirely logical, system of paragraphing. Other new features are an admirable collection of sentences for practising each of the sounds heard in our common speech, many references to dialect variations from normal pronunciations, especially as they are found in Scotland and America, and examples of variant spellings of each of the elementary sounds dealt with.

Not only has the value of the book been greatly heightened by these extensions, but there are obvious signs that every line of the earlier editions has been critically examined and altered where change seemed desirable. For instance, while still maintaining that Southern standard English makes no difference between "for" and "four," it is allowed that Northern English uses an "o" for the first vowel element in the latter, and similar words. Again, Professor Rippmann has abandoned the diphthongal notation of the vowel sounds in such words as "see" and "do," employing now the phonetic symbols *i:* and *u:* instead of *ij* and *uw*, though, in the spirit of Galileo, he still maintains that they *are* diphthongal. One regrets that he has not also conformed to the custom of some other phoneticians, notably Mr. Daniel Jones, in adopting a different notation of the first vowel-sound in "bite" and "bout," especially since he grants that these elements are different.

We are very glad to notice the advocacy of "chorus work" in speech practice. The teachers in our schools, in the attempt to make the reading-lesson a speech-lesson, not infrequently spoil the one function without establishing the other. Let it be granted that speech is a skill-subject rather than a knowledge-subject; that skill-subjects require practice; that a half-hour lesson only gives each child in a class of sixty half a minute's practice, and that only on the condition that the teacher imposes upon himself a rigid rule of silence: thus it follows that the average number of reading-lessons in a week only allow two and a half minutes individual practice per week! What is the remedy? Obviously the adamant laws of arithmetic forbid adequate practice unless the work is done *simultaneously*. Do we, then, advocate simultaneous reading? By no means. Speech-drill is not reading, and, as drill, may as well be done simultaneously as may physical-drill or music-drill.

All teachers of phonetics in Training Colleges owe a debt of gratitude to Professor Rippmann for his earlier publications on this important subject: that debt is greatly increased by this revised and extended version.

V. W. P.

State Policy in Irish Education, 1536—1816. By Rev. T. Corcoran, D.Litt., Professor of Education, N.U.I. pp. 234. Fallon Bros., Dublin; and Longmans, Green & Co., London.

MODERN methods in the study of History demand a preliminary training, which, unfortunately, only a few have been able to afford. The mere repetition of facts culled from textbooks does not necessarily imply the possession of the true historical spirit. When a student has reached a certain stage in his studies he requires ability to examine and criticize evidence in a scientific way, but as many fail to receive the proper training a great deal of time is lost, and often the history is misrepresented. In "State Policy in Irish Education," Dr. Corcoran has given us a book which gives a connected story in the "Introduction," and accompanies this with a number of extracts from sources of history usually inaccessible to the average student. Thus, while following the thesis, the evidence, which really

provides an atmosphere for the study, can be consulted as well. At times Dr. Corcoran refers particularly to those extracts which will repay the student for intensive reading, and, indeed, those who wish could carry on independent study of the "documents," and then turn to the "Introduction" for corroboration of the results achieved.

The book shows Dr. Corcoran as a teacher of History, and an exponent of historical "method" in accordance with the best modern practice. One passage in particular betrays the care the author has taken. He quotes from the reports of two officials concerning the influence of English adventurers on the policy in Ireland, and goes on to say, "In the light of these utterances of responsible Ministers of State in Ireland, charged with the maintenance and execution of the policy devised by the men they thus describe, and not by the irresponsible rhetoric of Burke or of Grattan, the Penal Laws against Education should be read and judged." Indexes of topics, place-names, and personal names greatly facilitate reference and study. It seems a pity that the later limit is 1816. The ultimate fate of the Kildare Place (or Street) Society is, for example, of interest to those who have been introduced to its origins, and the twenty years after 1830 are fraught with "Policy" which will repay the study. But perhaps the events of the past hundred years are receiving attention from Dr. Corcoran, than whom, probably, no one is better able to deal with them. But, taking the book as it is, it presents a useful synopsis of the efforts to provide education for a people who would not take it, because it aimed against their religious convictions, and in so many cases sought to proselytize. There were schools in variety and money in plenty, but there was also an utter failure to stamp out Catholicism by their means.

A. P. BRADDOCK.

**The History of the Family as a Social and Educational Institution.** By W. Goodsell, Ph.D. (xvi + 588 pp.) Macmillan, 8/6.

PROFESSOR Goodsell has undertaken a task of encyclopædic range. His method, as the title indicates, is primarily historical, and he has adopted a perhaps too exclusively sectional treatment. Thus, after chapters on the Primitive Family, there follow chapters on three types of Patriarchal Family—the Hebrew, the Greek, and the Roman, after which he describes the influence of early Christianity upon marriage, the family during the Middle Ages, and the Renaissance. Then the interest narrows down to the English Family of the seventeenth and eighteenth centuries, leading us naturally to that of the American Colonies. The rest of the book deals, in the main, with the nineteenth century family of England and America, affected as it has been by the transformation from agricultural to industrial conditions.

It is clear, from this outline of the contents of the book, that the author's view-point has been determined largely by things as they are to-day in two great Anglo-Saxon communities. As an anthropological study it cannot rank alongside Westermarck's "History of Human Marriage," for example. This, clearly, was not the author's intention, and he has on that account given very little attention to the question of origins. His object is rather to give a series of descriptive sketches of the working of monogamic family life, and the relations of its members to one another and to the general community. The disintegrating tendencies of the present day and current theories of reform are discussed with some fullness. But it is the parents rather than the children that form the centre of interest. We do not find, for example, any discussion of the decline of the parent as educator in these pages. How far the State is helping to disintegrate the family by taking over parental responsibilities in an ever-increasing degree is not considered. One almost comes to the conclusion that the family as an educational institution has ceased to exist, and that without Dr. Goodsell being aware of it!

Generally speaking, the educational aspect of the subject is rather slightly treated. As a philosophical history, the scope of the book is too restricted, its illustrative detail is neither sufficiently coherent nor is it nicely balanced, its

sections are too independent in their treatment. This criticism is prompted by the title, to write up to which would be the work of a lifetime. And yet the author has given us an undeniably interesting book, and his collection of references at the end of each chapter is almost encyclopædic.

J. A. G.

**How Children Learn to Draw.** By Walter Sargent and Elizabeth E. Miller. (v + 264 pp.) Ginn & Co.

THIS volume records an endeavour to grapple with a hitherto elusive subject as far as general education is concerned. Drawing is gradually being brought by such experiments out of the past chaos of indifference, of generalizations and of mindless copyings, and into orderly educational service. It is an account of an investigation into the effects of a persistent course of experiment designed to show the way in which a child learns the forms of the world of appearance.

The book does not deal with the training of the teacher, or with the principles of artistic construction. These things are presupposed, and greater stress is laid upon the possession of a fair degree of skill, plus teaching ability and educational insight, than upon high artistic power without these essentials. It is a well-illustrated record of a unified effort extending over a period of years, and as such it lays before us a continuous development.

The authors constantly insist on the stimulating effects of personality and on the usefulness of demonstration before the children. The hampering limitation of lists of objects suitable for drawing by children of various ages is swept away. The drawing lesson is never aimless. The demand exists before the drawing is attempted; it is free and untrammelled expression. Motive is supplied by the history, geography, or literature lesson, and by the innate demand for order and pleasing presentment of the facts.

Every means whereby the desired end may be reached is considered legitimate. Tradition counts for nothing. Records of direct observation, tracing in the air with the finger the general form just observed, copying and making tracings from pictures and hectographs, modelling, paper-cutting, and so on: this repetition forms, as it were, so many different text-books confirming and strengthening the child's own findings. An important accessory is the school art library and museum, which is freely used by all the children for their research work.

The authors candidly own that efficiency in immediate production is their object. The "harvest of the quiet eye" is not expressly touched upon. They say, nothing of drawing attention to the infinite variety and beauty of form, tone, and colour to which is due much of the joy to be derived from the world of appearance. A useful, practical book, nevertheless.

E. S. N.

**The Elements of Non-Euclidean Plane Geometry and Trigonometry.** By H. S. Carslaw. Longmans. Price 5/- net.

THIS treatise deals mainly with the simpler properties of plane Non-Euclidean Geometry, and omits the consideration of solid geometry. The wisdom of this course is evident, for when a student is first introduced to a system of geometry in which it is possible to draw through a given point an indefinite number of straight lines which do not intersect a given straight line, each of them having a common perpendicular with the given straight line; in which similar non-congruent triangles are impossible, and a straight line can be drawn through a given point parallel to two intersecting straight lines, he will acknowledge that he has quite enough of new ideas to master.

Most of the treatise is, naturally, devoted to Hyperbolic Geometry, but Elliptic Geometry also receives due attention. The proofs depart slightly from the classical ones, as no use is made of the principle of continuity. The Hyperbolic and Elliptic Trigonometries each receive a chapter; the proofs are clear and easy to follow, and the logical treatment is what we would expect from Professor Carslaw. In a preliminary chapter, a brief account is given of the logical objections to some of Euclid's proofs; due credit is, however, paid to Euclid as



having, in his Twelfth Axiom, given the most logical and simplest basis for Euclidean Geometry. A history of the discovery of Non-Euclidean Geometry is prefixed, and a note at the end indicates the importance of the new geometries to students of the theory of Relativity.

One feature whose inclusion would make the book even more valuable is at present lacking—the provision of a few selected examples which would illustrate Non-Euclidean Geometry, and make the book more useful for higher forms in schools; for, if mathematics is to maintain its ancient position as a whetstone for the wit, it is quite an open question whether it may not be desirable to supplement the simple proofs now given of Euclidean propositions by some of the results of a geometry which depends only on pure reason. A selection of such examples would make the book now under review suitable for use in schools without detracting from its present value for teachers of geometry.

A. H. LEAHY.

**Supervised Study.** By Alfred Lawrence Hall-Quest. (xvii + 433 pp.) Macmillan. 5/6.

THIS book is chiefly concerned with the problem of the school boy or girl as worker, and with the various ways in which the teacher may stimulate and encourage wise and economical effort on the part of his pupils. It is not a new problem, though, as the author rightly says, the method-books commonly neglect it, and apparently an authoritative list of technical terms used by professional students of education, for which Mr. C. H. Johnston was responsible, did not include the term "Supervised Study," as interpreted in this book—an interpretation so wide that it covers most oral lessons in language. Supervision, in Professor Hall-Quest's sense, is not a more or less passive role, as when we speak of supervising an examination. Readers on this side the water will wonder how over 400 pages could be written to such a title, and they may expect to find a treatise on the manifold tricks of the American schoolboy who is anxious at once "to pull his teacher's leg" or to evade his task. The sub-title brings us nearer to the subject matter of the book—"A Discussion of the Study-lesson in High School."

Although the author makes no new contribution to the problem, he has produced a very useful book. First of all it is a study of method from the standpoint of the pupil's gain in efficiency. Of course, that is the crux of all method, rightly understood, though much current teaching takes everything out of the teacher and very little out of the pupil. Boys and girls commonly do not learn the most important lessons of all—how to work with efficiency. This standpoint in the book is good in itself, and often illuminating. Secondly, the book is useful as containing a large collection of summaries of, and references to, published accounts of methods which illustrate its general doctrine.

The social, hygienic, practical, and psychological conditions of successful study are discussed, with many references to the results of recent research, in Part I, and Part II is devoted to the special methods applicable to the various subjects "studied" in secondary schools.

J. A. G.

**Ruler and Compasses.** By Hilda P. Hudson, M.A., Sc.D. 6/- net (with diagrams). Longmans' Modern Mathematical Series.

THIS excellent little book deals with the extent and limitations of geometrical constructions based upon the three postulates of Euclid. It answers the question: What problems can be solved by the use of ruler and compasses only? It is shown that when geometrical problems are translated into the language of algebra, and the methods of co-ordinate geometry are used to discuss them, those problems, and those alone, which can be made to depend on a linear equation whose root can be calculated by carrying out rational operations only, can be solved completely by a ruler construction. A combination of the two instruments will solve those which can be made to depend upon an algebraic equation whose degree must be a power of 2 and whose roots can be calculated by carrying out



rational operations together with the extraction of square roots only. The duplication of the cube and the trisection of a given angle are thus seen to be insoluble by ordinary geometrical methods, as each depends on the solution of a cubic equation.

It is also possible to determine what regular polygons can be constructed by ruler and compasses alone, and it is shown that of the regular polygons up to 20 sides those of 7, 9, 11, 13, 14, 18, 19 sides cannot be constructed.

Several chapters of worked examples are given in which the standard methods of attacking problems are classified. Well-chosen illustrations are given of the methods of loci, trial and error, projection, inversion, and reciprocation. The different methods are compared, and a numerical estimate of the length of each solution determined by a method based on Lemoine's system of Geometography. The whole book is full of interest to the student of elementary geometry, and is a valuable addition to this series of modern mathematical works. A. HOLDEN.

**Flower Drawing with the Children.** By Elizabeth S. Nutt. (viii + 82 pp.) J. W. Northend. 3/6 net.

MISS NUTT is an artist as well as a teacher of drawing, and this beautiful little quarto volume shows her power in both capacities. It contains some seventeen lessons, not all of which are devoted to the technique of work in colour; indeed, the great charm of the book lies in the subordination of mere technique to the cultivation of artistic feeling. What a contrast the result is when we compare it with the many "tricky" treatises upon which the art of the elementary school has been so long nourished. From the first page to the last we are in communion with a mind sensitive to beauty itself, and convinced that children may have their eyes opened to its appreciation and that their minds may learn how to express it with their hands. It is curiously arresting to find the book opening with two stories—one relating a conversation between Donatello and Brunelleschi, the other describing the origin of the Madonna Della Sedia. Thus we are brought into the inner sanctuary of Art and there we remain all the time, though the subject is no more than Flower Drawing with children. Appropriately enough, the flower drawing and all the sympathy for flowers we have gained in following out the lessons of the book, take us finally to the Tyrol, where flowers and landscape and people form a harmony that completely satisfies our æsthetic needs—a concrete example of what the whole book sets out to teach—harmony in the kingdom of God, which we must first seek, and having found it, mechanical dexterity will then come "as a free gift." This does not mean that technical matters are left out of the book. They are there, but in the right place always. J. A. G.

**The Dawn of Religion in the Mind of the Child: a Study of Child Life.** By Edith E. Read Mumford, M.A. Longmans, Green & Co. 1/6 net.

As readers of Mrs. Mumford's "Dawn of Character" might expect, this is an admirable little book. The children she writes of are as real and living as in the former work, and there is the same sincerity and closeness to real things throughout—in her treatment not only of childhood, but of religious life. A statement in the first chapter sets the tone for the book: "Merely to tell a child about God, and then to teach him a simple form of prayer, is but a poor substitute for leading him to 'know' God. Second-hand knowledge can never be a sufficient basis of intercourse." It is with first-hand knowledge that Mrs. Mumford deals; such as can come to any child through his own experience of love and gratitude and moral effort; and her suggestions to mother and teacher of ways for helping him to interpret this experience, could hardly be bettered. She has a true teacher's faith in the reserve power of the childish intelligence as well as of the childish will, and is wholly right (in the present writer's opinion) in wishing us to discuss the metaphysical difficulties of seven years old as one philosopher with another, instead of leaving them to cumber the path.

For the sake of Education, it is much to be wished that Mrs. Mumford would add several more books to the short list after her name on this title-page.

HELEN WODEHOUSE.

**Handwork and Social History.** By E. Stevinson; illustrated by E. Glaisyer. pp. 112. Clarendon Press.

THIS capital little book will save the time of busy teachers, for Miss Stevinson has read social history widely, and then, with an eye to the picturesque, has shown what can be illustrated in the Handwork period by the children in the Junior School. First, a short note on the characteristics of the period under study is given, and then an interesting description of the children's work. Both sections are profusely illustrated, and all the chapters from cave men to the dwellers in manor houses are suggestive and practical.

Although the descriptions are clear, there is nothing rigid in the treatment; much is left to the common sense of the new set of workers who take this book as a guide in their work—that is the best of it. The most fully worked-out section, as is only to be expected, is from the fourteenth century on. Here we see the travellers along the road, the monks, the grey-robed leper, the running messengers, the beggars, and the knights, sometimes stopping on their way to watch a miracle play, or to condone with an unfortunate in the stocks, or to bargain with the prentices. I am sure that no one who buys this little book will be sorry they have done so.

WOUTRINA A. BONE.

**The Bearings of Modern Psychology on Educational Theory and Practice.** By C. M. Meredith. 140 pp. Constable & Co.

As the title implies, this little book is not a primer of Psychology, but a review of the services which Psychology is rendering to the study and practice of Education. From that standpoint it is in every way excellent. The author writes clearly and simply enough even for non-psychological readers to follow her points, and to stimulate an interest in the science itself. Perhaps, in another edition, Mrs. Meredith might render further service to such readers by giving suitable references to psychological writings in which the doctrines she is discussing are more fully set forth.

The book is divided into two parts, in the first of which the instinctive origins of mental life and their structural development are described. The educational significance of these processes is admirably shown, with numerous and telling illustrations. In the second part, the author treats of Experiment in Education, Memory, and Adolescence, in the same enlightening way. Her chapter on Experiment puts the case with critical force and insight.

J.A.G.

**Nights and Days.** By Dr. Helen Wodehouse. 188 pp. Allen & Unwin. 4/6 net.

It is Dr. Wodehouse's practice apparently to give an address once a term or thereabouts to the students of the Bingley Training College on some ethical problem appropriate to the moment, or of particular import to her audience, and the happy idea of making them more widely accessible has led to the appearance of the present volume. The book is difficult to summarize. Its fifteen chapters are as varied as they are admirable. Their sanity of outlook, their call to courageous service, their philosophic spirit, and their admirable directness, make one feel that here is a book to keep, a book to live with. Each address is an excellent example of ethical analysis without any intrusion of philosophical mechanism.

The only fault one can find with the book is its price, and that, not because of any doubt about its intrinsic value, but because of the restriction it puts upon its sale. One would like to see it in the hands of every Training College student, and a shilling edition would make that possible. Now it will have to be a library book!

J.A.G.

**The Principles of Health Control.** By Francis W. Walters. (viii + 476 pp.) G. G. Harrap. 4/6 net.

THIS is a new type of book on personal hygiene which teachers might very well find useful. It is free from technicalities. The author is a well-informed layman, who has grasped essentials and knows how to make them clear to people equally

interested but less well-informed than himself. Its standpoint is clear from the title. Broadly speaking, the ordinary person is directly in command of his own health, and indirectly in less perfect control of the health of other folk. How the bodily machine can be made to work smoothly, efficiently and, accidents being barred, for a long time, by individual and co-operative care—that is the text of the book, and we have found its various chapters interesting examples of how hygiene might be taught advantageously in our schools and training colleges. Success in the sphere of practice will wait until we have driven home the lesson of personal responsibility.

#### BOOKS RECEIVED.

- Studies in Education** By M. W. Keatinge. (viii + 205 pp.) A. & C. Black.
- Freobel's Kindergarten Principles.** By W. H. Kilpatrick. (xii + 217 pp.) Macmillan. 4/-.
- Selected Poems of Samuel Taylor Coleridge.** Edited by A. Hamilton Thompson. (xxxviii + 164 pp.) Cambridge Press. 2/- net.
- [The third volume in the series of *English Romantic Poets*. Mr. Thompson's introduction is a helpful critical appreciation, which should be read after the poems are fairly well known. The notes sometimes suggest junior readers, for whom the introduction is pitched in too high a key. The poems chosen are typical of Coleridge at his best, and the little volumes so admirably printed should be treasured by many school boys and girls, and, indeed, by older students who love poetry.]
- Chatterton and his Poetry.** By John H. Ingram. (148 pp.) Harrap & Co. 1/- net.
- [The "Poetry and Life Series" has evidently found the place it deserves amongst our text-books of Literature. There are nearly thirty volumes now available. A warm welcome should be given to this little study of Chatterton, which carries out the general idea of the series excellently.]
- The Intelligence of the Feeble-minded.** By A. Binet and Th. Simon. Translated by Eliz. S. Kite. (328 pp.)
- The Development of Intelligence in Children.** By A. Binet and Th. Simon. Translated by Eliz. S. Kite. (336 pp.)
- [Both volumes are published by the Department of Research of the Training School at Vineland, New Jersey, which is under the energetic direction of Dr. Goddard, who contributes an introduction to each volume. The brilliant work of the French authors is, of course, well known, and we may offer a warm welcome to these translations, especially as they would probably not have come through ordinary publishing channels. Fuller notice of the volumes is reserved.]
- Educational Measurements.** By Daniel Starch, Ph.D. (vii + 202 pp.) Macmillan. 5/6 net.
- [An extremely useful summary of recent work in the direction of scientific gradation of schoolboy performances.]
- Sadoletto on Education.** A Translation of the *De pueris recte Instituendis*, with Notes and Introduction by E. T. Campagnac and K. Forbes. (xlviii + 141 pp.) Oxford University Press. 7/6 net.



## TRAINING COLLEGE ASSOCIATION.

### MINUTES OF COMMITTEE MEETING

HELD ON MARCH 10TH, 1916, AT 19 GREAT PETER STREET, WESTMINSTER.

The following members signed the attendance roll:—Miss M. M. Allan (President), Dr. Helen Wodehouse and Mr. T. Raymont (Vice-Presidents), Rev. Canon Blofeld, Mr. A. P. Braddock, Rev. H. A. Bren, Miss N. Catty, Mr. H. S. Cooke, Rev. Canon Dennis, Miss J. Dunlop, Miss A. Lloyd Evans, Miss F. Exton, Miss B. Forth, Miss D. Frood, Dr. Mary Gibson, Miss M. Glennie, Miss E. M. Gowan, Miss C. C. Graveson, Prof. J. A. Green, Mr. J. C. Hague, Miss F. Johnson, Miss E. M. Julian, Miss M. Liberty, Miss S. E. S. Richards, Rev. E. Sheehy, Miss F. M. Smith, Miss K. T. Stephenson, Rev. R. A. Thomas, Dr. J. F. Unstead, Miss Z. Walford, Miss M. A. Williams, Rev. Dr. Workman, and the Hon. Secretary.

Apologies for absence were received from Rev. Canon Bater, Miss Blyth, Miss C. Fox, Rev. J. A. Hannah, Rev. Preb. E. Hobson, Mr. D. Salmon.

- (1) The minutes of the last meeting (October 8th, 1915), were confirmed.
- (2) On the motion of Miss A. Lloyd Evans and Miss E. M. Julian, Mr. T. Raymont, of Goldsmiths' College (one of the Vice-Presidents for 1916), was elected President for 1917.
- (3) It was decided to hold the next Annual General Meeting on Tuesday, December 19th, 1916, with sectional meetings on the preceding day.
- (4) The Representative Sub-Committee for 1916 was appointed as follows:—

I. London and Suburban Residential Colleges	Rev. Canon Dennis (S. John's, Battersea).
	Miss F. Exton (Avery Hill).
II. Country Residential Colleges	Mr. J. W. Jarvis (S. Mark's, Chelsea).
	Miss C. G. Luard (Whitlands).
	Rev. H. A. Bren (Cheltenham).
	Miss J. M. Dunlop (Saffron Walden).
III. University Day Colleges	Miss B. Dunn (S. Gabriel's).
	Mr. E. H. Harding (Bangor Normal).
	Prof. A. Henderson (Nottingham).
	Miss W. Hindshaw (Manchester).
IV. Municipal Colleges	Miss M. Punnett (London Day).
	Dr. J. F. Unstead (Goldsmiths').
	Miss Gray (Graystoke Place).
	Mr. Lewis (Dudley).
	Miss Mercier (Leeds).
	Rev. V. W. Pearson (Sheffield).

With the Officers and the Editor of the "Journal" ex officio.

- (5) The Editor (Prof. J. A. Green) presented the Financial Report of the "Journal" for 1915. The Report was adopted, and a hearty vote of thanks, moved from the Chair, was accorded to Prof. Green for his continued work as Editor.
- (6) Reports were presented of the work of the following Special Sub-Committees:—
  - "English." By the convener, Miss K. Stephenson.
  - "Geography." By the convener, Dr. J. F. Unstead.
  - The Introductory Chapter of the Board's "Suggestions for Teachers." By the President, Miss Allan.
- (7) The question of the revision of the constitution of the Association was referred to the Representative Sub-Committee.
- (8) Letters from—
  - (a) The London Teachers' Association, submitting three resolutions adopted at a Mass Meeting of Members, on the question of the employment of unqualified and uncertificated persons as teachers of young children;
  - (b) The Simplified Spelling Society, giving report of an experiment on the teaching of reading;

were read, and it was decided to take no action on either of them.



**MINUTES OF A SPECIAL COMMITTEE MEETING,  
HELD ON JULY 7TH, 1916, AT THE LONDON DAY TRAINING COLLEGE.**

The following signed the attendance roll:—Miss M. M. Allan (President), Dr. Helen Wodehouse and Mr. T. Rayment (Vice-Presidents), Prof. J. Adams, Canon Bater, Rev. H. A. Bren, Mr. A. P. Braddock, Miss N. Catty, Miss A. F. Dodd, Miss B. M. Dunn, Miss F. Exton, Dr. Mary Gibson, Miss M. Glennie, Mr. W. T. Goode, Miss M. M. Gough, Mr. J. C. Hague, Miss F. Hawtrey, Miss W. Hindshaw, Mr. T. P. Holgate, Miss U. M. Irons, Mr. J. W. Jarvis, Miss F. Johnson, Mr. I. B. John, Miss E. Julian, Miss M. Liberty, Miss C. A. Mackintosh, Miss M. Morton, Prof. T. P. Nunn, Rev. V. W. Pearson, Miss M. Punnett, Miss H. M. Raw, Miss S. E. S. Richards, Miss F. M. Smith, Rev. H. Searle, Miss M. A. Thomas, Miss W. Todhunter, and the Secretary.

Apologies for non-attendance were received from:—Rev. Preb. E. Hammonds, Rev. J. R. W. Thomas, Rev. I. A. Smith, Miss J. W. Thomas, Mr. T. Herdman, Mr. R. Delaney, Miss Jackson, Miss C. Cumberbirch, Rev. R. Hudson, Prof. A. E. Dean, Miss M. Avery, Miss Hale, Miss Jenkins, Mr. J. M. Forster, Rev. Preb. Hobson, Rev. E. Sheehy, Prof. J. A. Green, Miss A. J. Walker, Miss A. C. Johnson, Miss A. T. Tucker.

The meeting had been called to consider a letter from nine members of the Leeds City Training College Staff, requesting the Association to ask the Board of Education to hold an inquiry into the circumstances which led to their resignations.

The following resolution was passed:—

“This Association, while deprecating any suggestion of interference in a matter with which it is not competent, either from its constitution or its position, to deal, is of opinion that, having regard to the widespread publicity given to the recent happenings at Leeds Training College, the Board of Education should be asked, in the general interests of education, to make a formal enquiry into the situation.”

**REPORT OF REPRESENTATIVE SUB-COMMITTEE.**

*(1) Proposed amalgamation of the Teachers' Training Association with this Association.*

At a joint meeting of representatives appointed by the Training College Association and the Teachers' Training Association held at the London Day Training College, on Saturday, June 17th, at 11.15 a.m., there were present:—Representing the T.C.A.: Miss Allan (President), Professor Rayment (Vice-President), Mr. H. E. Griffiths (Secretary), Professor Adams, Canon H. Wesley Dennis. Representing the T.T.A.: Professor Adamson, Mr. Fox, Professor Green, Miss Melhuish, Miss Powell, Miss Wood.

On the motion of Prof. Adams, seconded by Prof. Adamson, Miss Allan was voted to the chair. The Chairman briefly explained the object of the meeting. Mr. Fox suggested that as the Associations were accustomed, at a joint meeting, to elect a common representative to the Registration Council, this meeting should be regarded as a meeting of such representatives. It was pointed out that the representatives of the T.C.A. had been specially appointed to deal with the proposed amalgamation of the two associations, and were not the representatives for the election of a representative to the Registration Council. The suggestion was therefore withdrawn.

It was decided to deal with the suggestions as put forward in the letter addressed by the T.T.A. to the T.C.A., which was accordingly read by Mr. Griffiths. On behalf of the T.C.A., Miss Allan reported that (1) the representatives were of unanimous opinion that the title of the Association should not be altered, (2) they were prepared to recommend to the Association such

alterations in the constitution for the admission of members as would admit all members at present belonging to the T.T.A., (3) the constitution of the T.C.A. already admitted of the formation of branches or sections of members representing either a geographical district or an educational type, (4) the members of the T.T.A. who desired could at once be admitted to the T.C.A. with a proportional subscription for the unexpired term of the current year.

After a long and careful discussion it was agreed (1) That the T.T.A. should be amalgamated with the T.C.A. (2) On the motion of Canon Dennis, seconded by Prof. Adamson, that the title of the T.C.A. should remain unchanged, but that underneath in a bracket these words should be added: "with which is amalgamated the T.T.A." (3) On the motion of Prof. Green, seconded by Canon Dennis, that it should be recorded in the minutes of the proceedings that for the purpose of the election to the Teachers' Registration Council, the two bodies, viz., the T.C.A. and the T.T.A. will in future vote together, and that the secretary of the Teachers' Registration Council be informed accordingly.

(2) *The Constitution.*

Alterations proposed by the Committee:—

(a) Rule 3 (Membership) to read as follows:

The Principals and all other members of the Teaching Staffs of Training Colleges and Training Departments of other institutions recognized by the Board of Education, and others approved by the Association, who are or have been engaged in the work of training, shall be eligible as members of the Association.

(b) Rule 7 (Committee) to be amended as follows:

*Executive Committee.* The following types of Colleges to be represented thus:—

		Members.
I.	University—2 Principals and 2 others ... ..	= 4
II.	L.E.A.— 1 Principal and 1 other (Mixed Colleges) 1 Principal or Vice-Principal and 1 other	} = 4
III.	Other Governing Bodies—(Men's Colleges) 2 Principals and 2 others (Women's Colleges) 2 Principals and 2 others	} = 8
		—
		16
		—

Nominations for the representation of any group shall be invited from the representatives of each college in that group.

Each member of a group to vote only for that group.

#### COMMITTEE MEETING HELD ON OCTOBER 13th.

Present:—Miss M. M. Allan (President), in the chair; Mr. T. Raymont (Vice-President), Major H. E. Griffiths (Hon. Sec.), Miss Julian, Miss E. B. Cole, Miss M. A. Williams, Miss S. E. S. Richards, Miss C. C. Graveson, Miss M. Liberty, Rev. V. W. Pearson, Rev. D. J. Thomas, Mr. H. S. Cooke, Mr. T. P. Holgate, Miss K. T. Stephenson, Miss B. M. Dunn, Miss B. Forth, Mr. J. W. Jarvis, Dr. J. F. Urstead, Miss M. Catty, Miss Ivatt, Miss F. M. Smith, Miss E. L. Gowan, Rev. R. Hudson, Rev. Canon Dennis, Rev. H. A. Bren, Miss F. Johnson, Miss M. Glennie, Mr. F. J. R. Hendy, Miss A. C. Johnson, Miss Dunlop, Miss A. Lloyd Evans, Miss Punnett, Rev. Canon Stevenson.

Apologies for absence were received from Mr. W. T. Goode, Rev. Dr. Workman, Rev. Canon Bater, Rev. J. A. Hannah, Mr. D. Salmon, Rev. J. R. W. Thomas, Rev. Canon Fairchild, Rev. Canon Blofeld, Miss Hale, Miss Jenkins, Mr. Braddock, Mr. J. M. Forster, Prof. J. A. Green.

(1) The minutes of the last meeting were confirmed.

- (2) The following nominations were received for 1917:—  
 (a) For Vice-President (Woman):—Miss Dunlop, Miss Forth, Miss Hawtry, Miss Luard, Miss Richards, Dr. Helen Wodehouse.  
 (b) For Vice-President (Man):—Rev. Canon Blofeld, Rev. H. A. Bren, Rev. Canon Dennis, Mr. W. T. Goode, Major H. E. Griffiths, Rev. V. W. Pearson.  
 (c) For Hon. Sec. and Treasurer:—Major H. E. Griffiths.
- (3) The arrangements for the Annual Meeting, on December 19th, were left in the hands of the Representative Sub-Committee.
- (4) The Report of the Representative Sub-Committee on the proposed amalgamation of the Teachers' Training Association with this Association was approved, and it was decided to bring it before the Annual Meeting for final confirmation.  
 (Copies of this Report were circulated before the Meeting.)
- (5) The interim report on the Constitution (presented by the Representative Sub-Committee) was discussed at some length, the main points of the discussion being as to whether the General Committee should be abolished and an Executive Committee take its place, or whether there should be a General Committee and also an Executive Committee. (It will be remembered that the whole question of the re-drafting of the constitution had its origin in the fact that the General Committee is at present so large and unwieldy.)

A large number favoured the retention of the General Committee, and the voting was equal on the proposal "That an Executive Committee be approved."

It was decided to instruct the Sub-Committee to arrange, in the event of an Executive Committee being established, that the same members should not always be elected, and also for a representative of each Branch of the Association to be a member.

It was understood that the Sub-Committee would embody in their final draft for the Annual Meeting the wishes of the General Committee as expressed at this meeting.

#### MEETING OF REPRESENTATIVE SUB-COMMITTEE, OCTOBER 27th.

(1) The Constitution.—The draft constitution was accepted for presentation to the Annual Meeting. (A copy will be sent to each member before the Annual Meeting.)

(2) As arising out of the discussion on the conduct of the election of the Executive Committee, it was carried unanimously that the Editor of the *Journal* be asked to publish annually a list of the members of the Association, arranged in groups, as determined by Rule VI of the new constitution.

(3) It was agreed that the question of obtaining paid clerical assistance for the Hon. Secretary should be raised at the next Annual Meeting.

(4) The following preliminary arrangements for the Annual Meeting were made:—

##### *Monday, December 18th (Afternoon).*

A discussion on the organization of elementary and continuation school education. Prof. Nunn and Mr. Holland to be asked to open the discussion, and to be followed, if possible, by some one who would speak from the point of view of the elementary school.

##### *Tuesday, December 19th.*

10.30—12.45: President's Address. Business Meeting.

2.15: One or two Addresses.

It was agreed to leave the arrangement of the details to the Secretary and the President-elect.

## TRAINING COLLEGE ASSOCIATION

(with which is Amalgamated the Teachers' Training Association).

### DRAFT CONSTITUTION.

#### Title.

I The Association shall be called "The Training College Association," but in all official documents of the Association there shall be inserted underneath and within brackets the words, "with which is amalgamated the Teachers' Training Association."

#### Object.

II The object of the Association shall be to furnish opportunity for the discussion of educational questions, especially those relating to the training of teachers, and for the expression of a collective opinion thereon.

#### Conditions of Membership.

III There shall be eligible as members of the Association—(1) the Principals and all members of the Teaching Staffs of Training Colleges and Training Departments recognized by the Board of Education; and (2) other persons, approved by the Association, who are, or have been, engaged in the work of training teachers.

#### Subscription.

IV The Annual Subscription shall be 3s. 6d., and shall be payable on January 1st in each year.

V Any member whose subscription is in arrears for more than two years shall, after due notice, cease to belong to the Association.

#### Executive Committee.

VI There shall be an Executive Committee, which shall be elected annually from among the members of the Association, and shall be constituted as follows;—

- |   |        |
|---|--------|
| 1. Representing Colleges controlled by, or forming part of, a University or University College ... ..   | 4      |
| (2 Principals and 2 others)   |        |
| 2. Representing Colleges provided by Local Education Authorities—   |        |
| (a) For Men only and for Women only (1 Principal and 1 other);  | 4      |
| (b) Mixed (1 Principal or Vice-Principal and 1 other)...  |        |
| 3. Representing Colleges provided by other bodies—  |        |
| (a) For Men (2 Principals and 2 others);  | 8      |
| (b) For Women (2 Principals and 2 others) ... ..  |        |
| 4. Official members, viz.:—The President, the ex-President, the 2 Vice-Presidents, the Secretary, the Editor, and either the President or Secretary of each local Branch, as determined by that Branch ... .. | 8 or 9 |

VII For purposes of nomination and election, each group of colleges indicated in Rule VI, viz., 1, 2 (a), 2 (b), 3 (a), and 3 (b), shall be taken separately, any member in a group being entitled to nominate only from that group, and to vote only in that group.

VIII Nominations for the Executive Committee shall be sent to the Secretary not later than October 15th in each year. In the event of there being more than the requisite number of nominations for any group, voting papers shall be sent to those members of the Association who are entitled to vote in that group.

IX No member of the Executive Committee other than an official member may serve for more than four years consecutively.

X The Executive Committee shall have power to act in any business that arises between meetings of the Association, provided that no such action be in contravention of any rule of the Association, and provided also that, if a third of the members present so desire, no such action be taken without the sanction of a meeting of the Association.

XI The Executive Committee may at its discretion co-opt not more than two other members of the Association.



XII Any vacancy in the Executive Committee occurring in the course of the year among the representatives of any group of colleges shall be filled up by the Committee from among the members of the Association in that group in accordance with the constitution of the Committee as determined by Rule VI.

XIII The Executive Committee shall meet at least three times a year, i.e., before each meeting of the Association (see Rules XV—XVII), and at such other times as the President may direct.

XIV Seven members of the Committee shall form a quorum.

#### **Meetings of the Association.**

XV Two ordinary meetings of the Association shall be held each year on dates to be fixed at the previous Annual Meeting of the Association.

XVI The Annual Meeting of the Association shall be held in December or in January, on a day or days to be fixed at the previous Annual Meeting of the Association.

XVII A special meeting of the Association may be summoned at the discretion of the President, or by order of the Executive Committee, or on the signed request of not less than forty members of the Association.

XVIII All notices of motion for the Annual and Ordinary Meetings of the Association must be sent to the Secretary at least four clear weeks before the date fixed for the meeting.

#### **College Correspondents.**

XIX Each college having on its staff two or more members of the Association shall appoint a College Correspondent, whose duty it shall be to collect and to forward to the Treasurer the subscriptions of members in that college; to transmit to those members all notices received for that purpose from the Secretary; and generally to take cognizance of the interests of the Association in that college.

#### **Officers of the Association.**

XX The Officers of the Association shall be a President, two Vice-Presidents (one a woman), the ex-President, a Treasurer, a Secretary, and the Editor of the *Journal of Experimental Pedagogy and Training College Record*. The office of Treasurer and Secretary may be held by the same person.

XXI All the Officers shall retire at each Annual Meeting, but shall be eligible for re-election. Except in the event of the re-nomination for special reasons of the President, one of the Vice-Presidents shall be elected President for the ensuing year at the first ordinary meeting of the Association.

XXII The Vice-Presidents, the Treasurer, the Secretary, and the Editor shall be nominated at the ordinary meeting in October. In the event of there being more than one nomination for any of these offices, voting papers shall be sent, through the College Correspondent, to members of the Association. These papers shall be returned to the Secretary, and the result shall be announced at the Annual Meeting.

XXIII Any vacancy occurring in the course of the year among the officers shall be filled up by the Executive Committee; but a Vice-President so appointed shall not become President without the opportunity being afforded to all members of the Association to nominate other candidates, and, if necessary, to elect the President by vote.

#### **Alteration of Rules.**

XXIV No rule shall be altered except at the Annual Meeting of the Association, and then only in case there is a majority of two-thirds of those present in favour of the proposed alteration.

#### **Sections and Local Branches.**

XXV	As 1 in existing Rules regarding Sections, &c.			
XXVI	" 2	"	"	"
XXVII	" 3	"	"	"
XXVIII	" 4	"	"	"
XXIX	" 5	"	"	"
XXX	" 6	"	"	"

## GENERAL NOTES.

THE great crisis through which the nation is passing is making us acutely conscious of some of the weak places in our educational arrangements, and after the colossal sums it is spending upon mere destruction, we may confidently expect that the nation will be prepared to adopt a new attitude towards proposals for reconstructing its own life after the devastation of the war. Education in particular has been hampered all along by questions of cost. Thirty millions a year seemed a vast sum to be spending upon schools out of public funds—just about the sum we spend in a week on the war, one-third of which we provide from current income. We have got so used to thinking in hundreds of millions now, that projects which would double our present educational expenditure might even be thought modest.

More money—much more—must be spent on education. That is generally agreed, and already public and private committees are busy preparing schemes. The Educational Reform Council instituted by the Teachers' Guild has issued an interim report of great value. So far as this Journal is specially concerned, we may be allowed to offer a cordial welcome to the section relating to Research in Education. No other great spending department of the State does so little for research in its own sphere as the Board of Education. It is true that the modern Universities receive exiguous grants from the Board, and that it is the special province of Universities to promote research. But money is wanted there for researches in Physics, Chemistry, Biology, Medicine, and Applied Science, and even if the means available were increased tenfold, it would not be more than enough for the needs of those departments.

Research in Education is different in kind, and, whether we provide for it or not, education must go on. It is so with Agriculture, but Agriculture has its Rothamstead, where details of exact work have been kept over a long period, forming a record of fact of the utmost value to the science of Agriculture. Education is not less important than Agriculture, and we want, not one but six or eight, special institutions in which exact work can be done, and results recorded and published from time to time in such a form as the schoolmaster can understand. Only in that way can we expect ever to lift education from the almost hopeless empiricism of the present.

Work of first-rate importance is being done in many scattered places all over the country, but it is for the most part unusable. An officer of State visits the school. He is pleased with what he sees, and in some cases a very slight account of it appears in some official publication. Difficulties and how they are overcome, failures, experimental changes—none of these things appear, and the teacher who is inspired by one of these suggestive papers is too often prematurely disheartened because he has not had the whole truth put before him. Variety of effort we shall surely get, but the use which might be made of that variety will be small because no adequate or systematic records will be kept. Six or eight institutions of different kinds, organized with a view to investigation and the preservation of accurate records, would presently be an asset of enormous value, and, in comparison with the total expenditure upon schools, the cost would be negligible.

Whatever the administrator may do for education, the final result must depend on the teachers, and every movement which brings stimulus and encouragement to them is important. For that reason we are glad to record a second successful summer meeting of the Uplands Association, which, under the general inspiration of Professor Findlay, met for the first time in Glastonbury in 1915, and this summer

in Bangor Normal College. The meeting is not devoted to the pursuit of "subjects," but to the "discovery of directions in which educational reform is to be sought." It is not to be regarded as a rival to existing summer schools; it aims rather at supplementing their efforts and "at correcting their point of view." Parents as well as teachers are invited, and if the former will take their children, so much the better. We note with interest the large proportion of Training College lecturers who took part in the meeting.

The attention of members of the Training College Association is drawn to the great importance of the annual meeting, which is fixed for Tuesday, December 19th. Not only are important papers to be read, but the new constitution is to be considered. The great importance of a "live" association to education in this country is clear enough. The importance of the *personnel* of the Training Colleges to education, given the right spirit in the administration of the schools, cannot be over-estimated.

This number completes the third volume of the Journal. Unfortunately, printing costs have risen so much that it has been necessary to reduce the size of the issues by some sixteen pages. Even with that reduction the expenses are considerably in excess of previous years. We can meet that expense, however, if members of the Association will do all that in them lies to extend our circulation. They might, for example, induce local libraries and local education authorities to subscribe. The Editor will be happy to forward copies immediately on publication to all who will send him 3/- a year. A *few complete* sets of back volumes are still on sale, at published prices *plus* postage.

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## Teachers' Registration Council,

Representative of the Teaching Profession  
(Constituted by Order in Council, Feb. 29, 1912).

In accordance with the above Order, a

# REGISTER OF TEACHERS

is now maintained by the Council.

For Information apply to:

THE SECRETARY, TEACHERS' REGISTRATION COUNCIL,  
2 Bloomsbury Square, London, W.C.

The Journal of  
**Experimental Pedagogy**

AND

**Training College Record.**

EDITED

(ON BEHALF OF THE TRAINING COLLEGE ASSOCIATION) BY

PROFESSOR J. A. GREEN.

*Vol. III. 1915-16.*

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